Province of British Columbia

Northwest Economic Development Studies

Socio-Economic Overview

Ministry of Industry and
Small Business Development
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SOCIO-ECONOMIC OVERVIEW

TASK FORCE ON NORTHWEST ECONOMIC DEVELOPMENT OPPORTUNITIES

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The Working Group accepts full responsibility for the content of this report and any conclusions reached herein.

PREFACE

During late 1981 and early 1982 the Cabinet Committee on Economic Development made a series of fact-finding visits to Northwest British Columbia. In response to briefs presented by a large number of private citizens, corporations and public groups, the Cabinet Committee commissioned a report which would summarize the area's economic potential. That report "The Northwest Region, A British Columbia Regional Economic Study" was released on September 15th, 1982.

The September 1982 report states that the area north of the Highway 16/CNR northline corridor has substantial development potential based mainly upon the significant but largely undeveloped mineral resources. However, this area lacks virtually all of the necessary infrastructure to sustain early large scale development. Lack of transportation and municipal facilities and adequate power at reasonable cost are seen as significant constraints to development at the present time. The report noted that development of minerals and other resources will require substantial private and public investments - investments which can only be made after careful planning and consideration of alternatives.

In response to the September 1982 report, the Cabinet Committee on Economic Development directed an Inter-Ministry Task Force to begin work on a series of detailed studies on the northern part of the Northwest region (i.e. from Stewart to the Yukon border). These studies were undertaken to determine the scale and timing of potential mineral developments, and to identify options to supply power, transportation and community infrastructure in order to serve those developments. The Task Force was also asked to identify the social and environmental issues which might arise as development proceeds.

The product of these studies is a set of six Inter-Ministry Task Force reports plus a summary report which includes the findings of these six background studies. It should be emphasized that these studies do not represent a blueprint for development, but rather indicate priorities for future planning and development. The reports identify options and, as far as possible, the negative and positive factors associated with each option. Final decisions on any specific development options would be premature at this stage. Such decisions will have to await further analysis and more concrete private sector proposals for the development of the resources of the region.

Finally, it should be noted that during the course of these studies the mine development scenarios were refined as more information became available. These scenarios have been updated in the background reports where possible. However, in the power supply report and the transportation report, the analysis is based on the original hypothetical development scenario. The environmental overview report is based upon the early definitions of potential development options provided by the other working groups. The conclusions of these reports are not materially altered by the refined development scenario.

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1.0 EXECUTIVE SUMMARY

- A task force on economic development opportunities for northwest British Columbia was created in May 1982. Its purpose was to examine the feasibility of several potential mine projects in the region.

- Six working groups were created; this report represents the Environmental and Social Impact Group's socio-economic analysis of a given set of mine projects.

- The hypothetical development scenario would have important socio-economic impacts on the northwest region.

- Manpower demand generated by the development scenario would exceed the supply in the Northwest, resulting in significant in-migration to the region.

- The "northern zone" of the region, particularly communities such as Telegraph Creek, Dease Lake and Iskut, would be most directly affected by development of this nature.

- Potential impacts on fish and wildlife resources would have important consequences for hunting, fishing, trapping and guide-outfitting activities in the northern zone.

- Wildlife impacts would be particularly significant to the native Indian population who are, to some extent, dependent on these resources for their food supply.

- Northern zone communities experience chronic unemployment and could benefit from employment opportunities provided by development projects.

- Local participation in the planning process for resource developments is a key issue in the region.

- Negotiation and resolution of land claims issues is regarded by native Indian and other residents as a pre-condition to development.

- Preliminary analysis indicates that small northern zone communities would likely encounter serious difficulties accommodating the workforces of mine projects.

- The development of new towns to service mine projects provides an alternative to expanding northern zone communities but would still have potentially significant impacts on existing economic activities and local communities.

- Locating workforces of mine projects in "southern zone" regional centres, such as Prince Rupert, Kitimat, Terrace, Smithers and Stewart, with workers commuting to minesites on a block-time rotation basis is a settlement alternative that would offer several positive benefits. These include:

  - minimal social impacts on northern zone communities;

  - less pressure on fish and wildlife resources than options which locate workforces in the northern zone;

  - the possibility of incorporating northern communities into a commuting scheme which focusses on southern zone regional centres;

  - population impacts occurring primarily in larger regional centres with the capacity to accommodate growth;

  - mine projects contributing to the economic diversity and stability of regional centres.

To date, relatively few northern resource development projects have utilized a long-distance block-time commuting scheme. Its viability for northwest development would depend upon:

- the technical feasibility of commuting relatively large numbers of workers in northwest B.C.;

- the financial costs of block-time commuting arrangements relative to other settlement options;

- further research on the potential negative impacts of block-time commuting such as family stresses associated with the separation of workers and their families for extended periods.

2.0 INTRODUCTION

2.1 Background

In May 1982, the Cabinet Committee on Economic Development created an Inter-Ministry Task Force on Northwest Economic Development Opportunities. The purpose of the Task Force was to examine the feasibility and implications of a number of potential mine projects in northwest British Columbia. To accomplish this, the Task Force established six working groups, each with a specific focus. The working groups were as follows:

1) Economic/Financial and Marketing Group
2) Mineral Resource Group
3) Transportation Group
4) Energy Group
5) Municipal Group
6) Environmental and Social Impact Group

Each working group was charged with the task of preparing a preliminary analysis and assessment of an hypothetical mine development scenario and reporting their findings to the Task Force which would, in turn, report back to the Cabinet Committee on Economic Development.

2.2 Purpose

The purpose of this report is to provide a preliminary assessment of the potential socio-economic impacts of the mine development scenario in northwest British Columbia to the year 2001.

The assessment first involves an historical overview of the study area and an examination of current socio-economic conditions. The development scenario is then evaluated in terms

of its potential effects on regional labour demand and supply and implications for: population change; existing resource-based economic activities; employment opportunities for local residents; and local concerns with respect to involvement in the resource development planning process.

Existing communities in the Northwest are compared on the basis of their likely adaptability to population growth and social change. Finally, the various settlement options proposed by the Municipal Working Group are evaluated in terms of their comparative implications for the employment of regional residents, community and workforce stability, and the potential for social problems and conflict.

2.3 Study Approach

The Environmental and Social Impact Working Group was divided into two components, each of which was to prepare a report.

In the socio-economic analysis, data on the existing population in the region as well as historical information was gleaned from a variety of published and unpublished reports. Discussions with government agency representatives familiar with the study area were used to supplement archival research. The analysis of potential development impacts on existing communities was based on the results of a series of interviews with social agency representatives concerned with the delivery of social services to the region.

Reviewing agencies consisted of the provincial ministries of Education, Labour, Health, Human Resources and the Attorney General and also included the R.C.M.P. These agencies provided baseline data on existing social services and facilities, their capacities and utilization as well as projections of future demand. In addition, each reviewing agency

provided a preliminary comparative evaluation of the range and extent of social impacts potentially associated with the development scenario and settlement options.

Research on the potential socio-economic implications of long-distance block-time commuting consisted of a review of the relevant literature, focussing on the documented cases of mining industry block-time commuting in the Canadian north.

2.4 The Study Area

The study area is defined to include the Stikine Region and that portion of the Kitimat-Stikine Regional District north of and including the District of Stewart. The nine potential mining projects included in the development scenario are located in this area. The population of the area is small and dispersed among several small communities, the largest of which are Stewart, Cassiar, Telegraph Creek, Dease Lake, Iskut and Atlin.

The development scenario is also expected to have social implications of a regional nature which would affect larger communities to the south of the study area. For the purposes of this analysis, the latter communities are referred to as "the southern zone" of the northwest region. Of the five communities identified as regional centres, four (Prince Rupert, Terrace, Kitimat and Smithers) are located in the southern zone. Stewart is also referred to as a regional centre.

In this report, the area referred to as "the northern zone" of the northwest region should be equated with the study area minus the District of Stewart. The analysis in this report concentrates on those communities in the northern zone which are closest to potential mine projects, namely Telegraph Creek, Iskut

and Dease Lake. The community of Cassiar is not discussed because it is a company town designed specifically to service the Cassiar asbestos mine. In addition, since the social and community impacts of the Adanac mine project are dealt with at length in the company's Stage II submission, that project and community are discussed only briefly in this report.

2.5 Social Impact Group

The Socio-Economic Overview report was compiled and edited by the Economic Development Policy Bureau of the Ministry of Industry and Small Business Development in close cooperation with the Ministry of Municipal Affairs. The following individuals comprised the Social Impact Group.

Ray Crook (chairman)	Energy, Mines & Petroleum Resources
Glen Scobie	Industry and Small Business Development
Beth Carter	Industry and Small Business Development
Ted Rattenberry	Industry and Small Business Development
Gary Paget	Municipal Affairs
Connie Halbert	Municipal Affairs
Peter Ostergaard	Municipal Affairs
Lyle Viereck	Labour

3.0 THE REGION AT PRESENT

3.1 Introduction

The northwest corner of British Columbia that is the subject of this study can be roughly marked out on a map by drawing a straight line from the head of the Portland Canal on the west to the northern arm of Williston Lake to the east. The Rocky Mountains, the Yukon border and the border with Alaska encircle this region which is one of the most scenic and remote in the province.

The northwest region contains approximately 18 percent of the total land area of British Columbia and 0.2 percent of the province's population (about 5,000 people in 1981). Well over three-quarters of this population reside in six communities: Stewart, Atlin, Telegraph Creek, Iskut, Dease Lake and Cassiar. These communities have been connected by road to the rest of the country only since the 1950's. Dease Lake and Iskut are located on Highway 37, while Stewart, Telegraph Creek and Cassiar are linked to that highway by feeder roads. Atlin is still not connected by road to the rest of the province, land access being possible only via the Yukon portion of the Alaska Highway.

The sketch of present circumstances in the northwest corner of British Columbia that follows has been constructed exclusively from published information. The consequent omissions that may loom large to the knowledgeable reader who lives in the area can, it is hoped, be corrected in future work.

3.2 History*

The patterns of life in any community or region are in a great many ways the result of the history of the area. In

---

* The facts in this history were drawn from the historical and anthropological sources listed in the References section at the back of this report.

order to fully comprehend current social and economic conditions in the northwest corner of British Columbia, it will be necessary first to have some grasp of its history.

Archaeological evidence indicates that the northwestern corner of British Columbia has been continuously occupied for at least the past 4,000 years. Some Indian house sites in the Prince Rupert area have been occupied throughout this time and, since the coastal people are thought to have migrated from the interior, it is likely that the interior regions of northern British Columbia have seen human occupation for the last 5,000 to 10,000 years.

Seven different Indian tribes have made northwestern British Columbia their home. The present-day town of Atlin is located in the territory of the Tagish Tlingit. South and east of them are the territories of the Tahltan people. Farther south, between the upper reaches of the Nass and the Stikine, is the western part of the territories of the Gitksan. Between these two tribes lived a group called the Tsetsaut of whose people very little is known as the group disappeared in the early 1800's. To the east of the Gitksan are the northernmost reaches of the territories of the Carrier and northeast of the Carrier were the territories of the Sekani. Finally, at the northeastern reaches of the region, along the Liard River, occur the territories of the Kaska.

Anthropologists divide these Indian tribes into three groups on the basis of language (Tlingit, Tsimshian, Athapaskan) and two groups on the basis of socio-economic adaptation: coastal (Gitksan, Tlingit) and subarctic (Kaska, Tahltan, Sekani and Carrier).

The lifestyle of the Indian people of the Northwest can be described as a strategy designed to get the most from the resources available, those resources being animal and fish

protein, fruit and vegetable foods and materials for tools, clothing and shelter. On the coast, where fish resources are fairly predictable, permanent villages and an elaborate social/ ceremonial life are possible. In the interior, where the natural resources are more scattered and less predictable, village life is possible only when enough food has been assembled to permit it. The rest of the year is spent in diverse resource zones which are known to be able to support smaller groups of people. The resulting lifestyle was called "nomadic" by the first white people to observe it, who, coming from permanent villages themselves, could not discern the strategic pattern on which it was based.

The first non-Indians to settle in the Northwest were fur traders of the Hudson's Bay Company who established Fort Connolly on Bear Lake in 1826. The interior Indian people, however, had been familiar with the white man and his technology for over 40 years as a result of their trade with coastal Indians who, in turn, had been selling furs to Russian, American and English ship-borne traders. By the 1840's, two more forts were established: Fort Nass (later Fort Simpson) on the coast and an interior fort at Dease Lake. These forts were established only where the Indians allowed them; to maximize prices received for furs, the Tahltan permitted the establishment of the Dease Lake fort over the objections of their coastal trading partners who attacked it in 1838 in its first year of operation.

In 1858, thousands of white miners poured into southern British Columbia for the Fraser River gold strike, and then pressed north. The miners arrived on the Stikine River in 1861-63 for the Stikine Rush; the Tahltan greeted the earliest arrivals by stripping them of their clothes and putting them back in the river that had brought them inland! The Dease Lake Rush came in 1872, the Cassiar Rush in 1876, the Klondike Rush in 1897-98 and the Atlin Rush in '99.

To manage the impacts of the push for gold, the then Crown Colony of British Columbia created first the Stikine Territory (absorbed into the colony in 1863) and then the Cassiar Territory. Thus, when British Columbia entered Confederation in 1867, the northwestern part of the colony entered with it.

The gold rushes brought permanent change to the northwestern corner of British Columbia; the white man began to compete directly with the Indians for the resources of the area. Thousands came; most left, but many stayed. Centreville, which was reported in 1980 to have a population of 2, was, in the 1870's, a bustling metropolis of 3,000 people. Riverboats began to ply the Stikine up to Telegraph Creek on a regular basis. Western Union, in 1865, began construction of an overland telegraph line to pass through Hazelton, Telegraph Creek and Atlin to the Yukon. The completion of the Transatlantic cable in 1866 halted construction; the line was not completed until 1901.

By the turn of the century, with the miners retreating (Atlin shrank from 6,000 people in 1899 to 1,500 in 1904), the pace of development slowed. The only two major government efforts in the northwest region were the completion of the Yukon telegraph (which was maintained by line operators living in cabins spaced about 20 to 50 miles apart along the trail) and the setting out of Indian reserves.

In 1905, the first three Tahltan reserves were laid out by Commissioner Vowell around Telegraph Creek. In 1916, the Royal Commission on the Indian Land Question in B.C. laid out 8 more reserves for the Tahltan, the Liard reserves, and the old Iskut reserve near Telegraph Creek. In 1930, the federal government purchased land from the provincial government that would eventually create the new Iskut reserve at Kluachon Lake and reserves for the Takla Lake Band at Bear Lake. The creation of these reserves in the absence of a treaty is the foundation of the Indian land claims in the northwest region (see the

concluding section of this chapter for a more detailed discussion).

Except for a flurry of activity connected with the building of the Alaska Highway during World War II, life in the Northwest was relatively uneventful until the early 1950's. The number of white people in the region was small and they relied upon placer mining, prospecting, trapping and guiding for livelihoods. Telegraph Creek and Dease Lake developed by the 1920's into centres for big game trophy hunting and remain so to this day. The Indian people, who were the majority of the population, remained basically undisturbed in their traditional activities. As late as the 1940's, the people in Sekani communities near the Rocky Mountain trench saw missionaries only twice a year, for a month or two in the summer and again at Christmas. Survey mapping of the area was only completed by the provincial government in the 1940's.

Industrial development in the northwest region began in the early 1950's when tne Alaska Highway haul road to Watson Lake was opened to civilian traffic and a mining access road was constructed to connect McDame to Watson Lake. In 1951, Cassiar Asbestos Corporation was formed and a tent town of 250 miners and construction workers was erected on the site of the present community of Cassiar. Seeing the building of roads as a development catalyst, in 1953, the provincial government began construction of a road that was to connect Cassiar with Stewart on the west coast and Hazelton farther south. Federal funds were contributed in 1958 and by 1960 the road had reached the south end of Dease Lake. After completion of the Ningunsaw Pass section, the road was opened in 1972.

Dease Lake settlement has emerged as the major service centre along Highway 37, overshadowing Telegraph Creek as the principal community in the region. Telegraph Creek is now at the end of the modern version of the old miner's trail instead of at its start.

Eddontenajon has developed as a small service centre in response to the growth in traffic volumes after 1972 when the highway was completed.

The community of Iskut, on the highway south of Dease Lake near Eddontenajon, was established in 1963. The Indian people who live here moved from reserve land on the Stikine River across from the Tahltan Reserve at Telegraph Creek. The twentieth century history of these people is an epic tale of the Northwest. Originally from the Bear Lake district, they moved in 1926 to Thutade Lake after the fur traders and missionaries stopped coming to Bear Lake. From there, near the headwaters of the Finlay River at Caribou Hide settlement, they would travel every year to Telegraph Creek to sell their furs in the summer sales. Finally, in 1949, they moved to Telegraph Creek. Although some anthropologists consider them Sekani, the Iskut people consider themselves Tahltan. The discussion is perhaps best summed up in the words of Alec Jack.(35)

> In 1949, (we) decided to live on money instead of caribou. We put our dialects in our back pockets and just use English now.
>
> (the "we" is said to refer to the Caribou Hide people, the Klappan River Band, the Sheslay River Band, the Bear Lake Band, the Dease Lake Band, and the Telegraph Creek Band - now all part of the Tahltan Band).

A final historical note concerns the construction of a B.C. Railway extension to Dease Lake. In the late 1960's, the decision to proceed with the extension was made on the basis of the economic potential of shipment volumes that were thought would result as the railway supplied a stimulus to economic development in the region. Within about 5 years, it became evident that initial projections of development had been too optimistic and, in 1977, construction was halted by the Province. Many of the current residents of Dease Lake moved to

the community in order to take advantage of business opportunities resulting from both the rail and road connections.

3.3 The Region Today

The following description of current conditions in the northwest study area is based on a variety of published sources, principally information from Statistics Canada. A cautionary note is required regarding the statistical data. In census areas where the population is small, Statistics Canada rounds off the last digit of most figures to either 0 or 5 to protect the confidentiality of those reporting. This explains why many of the columns in the statistical tables in the Appendix do not "add up". A further complication with the statistical data, put in non-technical terms, is that the possibility of errors appearing grows as the population being described shrinks. A social scientist can be reasonably certain about conclusions drawn from statistics about the entire country but must be extremely wary in reaching conclusions about a population of only 5,000 people, such as that in northern northwest B.C. As a result, this preliminary social profile will require confirmation through new research in the field.

It is also appropriate before proceeding to discuss the discrepancies between information from Statistics Canada and that from the Department of Indian and Northern Affairs regarding the Indian population in the Northwest. The Department maintains an annual count of all members of Indian bands and records how many members of each band live on or off the reserves. Statistics Canada figures reflect, in contrast, the number of reserve residents who returned the Census form. Many Indian bands and individuals in British Columbia refused to participate in the 1981 Census for political and philosophical reasons, thus the figures may not be very reliable. An additional complication with Census statistics on the Indian population is that status* Indians living off reserve and non-status* Indians are not

counted separately in the general population. Because of this problem, social scientists in British Columbia follow a suggestion made by the B.C. Association of Non-Status Indians to calculate the likely total Indian population of a region - take the number of status Indians and double it.(11)

The Population

In 1981, approximately 5,306 people lived in the area contained within the Kitimat-Stikine A, Stikine A and Stewart Census areas (Table 1). The population had expanded considerably since 1976; Kitimat-Stikine A grew by 47% and Stikine A was up 20%. Only Stewart's growth rate of 5% over the period was below the 10% growth rate of B.C. as a whole during that time, although over one-quarter of the area's population resides in the community of Stewart. The population in the rest of the area changes with the time of year. According to local sources, there is a 10% to 20% difference between the winter population of local communities and the summer population (Table 2). Tourism services, highway projects, mineral exploration and B.C. Hydro field work all contribute to this seasonal population flux.

Registered or status Indian people account for about one-third of the population; the total number of Indians in the region likely amounts to over half the population. According to Indian and Northern Affairs figures, the majority of Indian people in the Northwest live on reserve, with the notable exception of members of the Tahltan Band (Table 3). While the

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* Status Indians are persons recognized as Indians under the Indian Act (they may or may not be of Indian biological ancestry). Non-status Indians are persons of Indian biological ancestry who are not recognized as Indians under the Indian Act. For an explanation of how this situation arose, read reference number 13.

Iskut Band has 38% of its population living off reserve and the Takla Lake Band has 27%, the Tahltan Band is shown to have 64% of its members living off reserve. The B.C. off-reserve average is 39% and the only other northern band whose figures approach those of the Tahltan is the Greenville Band which has 56% of its members living off reserve. Why the Tahltan Band should stand out in this way is uncertain; either the figures are wrong or the members of the band must have some extremely compelling reasons for living outside their reserve boundaries.

The population of the northwest study area would appear to differ quite a bit from the B.C. population as a whole (Table 4). Overall, the area has a higher proportion of working age people (about 70% ages 15 to 64), a higher proportion of children (28% ages 0-14) and a much smaller number of seniors (ages 65+ are less than 1% in Stewart and 3% in Stikine A). The Census figures for the Indian bands provide a contrast in other directions (Table 4). Between 50% and 60% of the Indian people are of working age (compared to about 67% in the B.C. population), about 43% are children (22% for B.C.) and, depending on the band, from 1% to 7% are seniors (12% for B.C.). If these figures are accurate, it would mean that Indians of working age in the Northwest have almost twice as many dependents to support than working age people in, say, Stewart. A final note about people living in the Northwest is that women over the age of 15 constitute a significantly smaller proportion of the population than is generally the case in the rest of British Columbia (Table 5).

In the B.C. population in 1981, 51% of the population were married, 20% were never-marrieds over the age of 15, 5% were widowed and 3% were divorced (Table 6). The northwest population presents some contrasts to the provincial picture. In Kitimat-Stikine A, 55% were married, 13% were never-marrieds, 1% were widowed and 2% were divorced; in contrast are the respective figures from Stewart of 47%, 21%, 0.7% and 2%. The notable lower

percentages of widowed people is, of course, a reflection of the small proportion of seniors in the population. The other variations from the provincial norm can probably be attributed, in part, to statistical error.

Statistical error is not likely the only source of the Indian population's variation from the provincial norm. The percentage of married people in the population ranges from 39% in the Tahltan Band to 28% in the Takla Lake Band, compared to the 51% married in the B.C. population (Table 6). This difference is a reflection of two factors: (1) that adults are a smaller proportion of the Indian population; and (2) for personal and political reasons, some Indian women choose not to marry rather than lose their status under the Indian Act.

The numbers presented in Table 7 outlining family characteristics in the northwest study area reveal some features that have important implications for economic development. While the average number of persons per family and children per family is similar to that throughout the province, the picture of children at home is quite different. Children under the age of 6 represent a far larger proportion of the number of children at home in the Northwest than is the case in the rest of B.C. (33% - 42% compared with 25%). In the absence of daycare services, this characteristic has important implications for the participation of women in the labour force, assuming traditional family work organization. Another important feature of the population of children at home is that young adults, ages 15 to 24, represent only 10% to 24% of those children, compared with 32% in the B.C. population of children at home. In the Stikine A Census District in 1981, there were 310 young adults between the ages of 15 and 24, of whom 145, or 47%, were living at home. Province-wide in 1981, 56% of young adults ages 15 to 24 were living at home. The absence of high school and college facilities in the smaller northern communities could account for this difference. It is also possible that a larger proportion of

young adults in the Northwest are supporting themselves independently. Both factors would have important implications for manpower training strategies designed to maximize local employment in northwest development.

Local manpower development efforts will also have to take the educational background of the population into account. As Tables 8 and 9 illustrate, the statistical picture of education levels in the northwest study area differs somewhat from that of the province as a whole, at least in 1976. Provincially, 63% of the population is educated to Grade 11 or more; 37% is educated to Grade 10 or less. In the Northwest, the Stikine A census area presents an almost identical picture but Stewart and the Kitimat-Stikine A census areas differ. In Stewart, 58% of the population has Grade 11 or more and, in Kitimat-Stikine A, the proportion drops to 47%. Kitimat-Stikine A also stands out in that 11% of the population has less than a Grade 5 education. According to the Census figures, 41% of the Tahltan Band and 6% of the Takla Lake Band have Grade 11 or more. One feature of the education picture worth noting is that, except in the Indian bands, women constitute a significant proportion of those individuals in the Northwest with higher education - 50% of those with grades 11-13, 45% of those with post-secondary, 42% of those with some university and 38% of those with a university degree.

Assuming the statistics are accurate and assuming the picture has not much changed between 1976 and 1982, it would appear that some attention will need to be paid to academic and vocational upgrading programs in manpower planning for northwest development. It should be noted, however, that the need for upgrading may not appear as great following a realistic assessment of educational requirements for mining jobs and a field survey of the northwest population.

In all likelihood, the 1981 Census information for the Northwest, when it is finally available, will show considerable change over 1976. When the population expansion in Kitimat-Stikine A and Stikine A is considered in conjunction with the population mobility statistics in Table 10, a picture emerges of a highly mobile, recently arrived population. British Columbia as a province has a mobile population but, whereas 42% of the people in the province did not move between 1971 and 1976, only 34% of the people in the Northwest were in the same dwelling in 1976 as five years earlier. A distinctive feature of the people moving in the Northwest is that the vast majority of them had moved to the area; only 3% were in different dwellings in the same district in 1976 compared with 23% of the movers in the rest of the province. Almost one-quarter of people who moved to the Northwest between 1971 and 1976 had come from elsewhere in B.C. and a significant proportion of Northwest movers in 1976 had come to the area from other places in Canada, especially to Stewart where the proportion is highest. Stikine A exhibits the highest proportion of movers who came from outside Canada. Throughout the Northwest, the proportion of movers who came from outside Canada is almost twice that in the provincial population of movers.

Without immigration data, the origins of the movers from outside Canada are not known; there are few clues in the Census information regarding mother tongue. According to the 1981 census, 82% of the people in British Columbia spoke English as their first language, 2% spoke French and 16% spoke some other language. In the Northwest in 1981, 87% of the people spoke English as their first language, 4% spoke French and 9% spoke a different language. Clearly, the northwest area has a higher than average number of English and French speakers, compared to the rest of the province.

The Labour Force

The labour force in the northwest study area, like the region's general population, exhibits some unique features compared to the province as a whole. As Tables 11 and 12 illustrate, workers between the ages of 25 and 34 years constitute a much larger proportion of the labour force in the Northwest than in the B.C. labour force. Well over one-third of the labour force is in this age group in the Northwest compared to about one-quarter in the provincial labour force. Among the Indian bands in the Northwest (Table 12), this age group amounts to almost one-half of the total workforce, twice the proportion in the province generally.

The labour force participation figures for the Northwest in 1976 also show some variance from those in the rest of British Columbia (Tables 13, 14 and 16). The percentage of males in the labour force in the Northwest is 7% higher overall, with 82% of men over the age of 15 working or wishing to work. Men ages 25-34 have the highest percentage in the labour force at 96% but below and above that age group, a lower percentage of men are working than is true in the rest of the province (Table 13). The most significant exception to this pattern is the high percentage of teenage men in the labour force (63%), at a rate 9% higher than that in B.C. generally. This figure supports the earlier tentative conclusion that many young people in the Northwest support themselves independently from their local families.

In a comparison with B.C. averages, the picture of female labour force participation in the Northwest is the obverse of that of the males. Females in the Northwest in 1976 made up a smaller portion of the population than was the case in the rest of the province (Table 15) but that fact does not explain why the proportion of working women is noticeably lower in the Northwest than in B.C. generally. Keeping in mind that the small sample

size could be skewing the statistics, in the 20 to 24 age bracket, 30% fewer northwest women were in the labour force than was the case for B.C. (37% compared to 67%). Assuming the data are fairly accurate and assuming that northwest women would like to be able to work at rates similar to those of other women in B.C., the information in Table 14 suggests that significant barriers to the employment of women exist in the northwest study area. Women appear to be educated as well as men in the Northwest so that does not seem to be a major barrier. A clue to the problem lies in the fact that children under school age make up a very significant proportion of all children living at home (see Table 7). Such children are 42% of children at home in Kitimat-Stikine A, 33% in Stikine A and 40% in Stewart, compared with 25% in the B.C. population. It is not likely an accident that the highest female labour force participation rate in the Northwest is in Stikine A where the proportion of pre-school children is the lowest. It would appear that provision of daycare services will likely be a necessary precondition to increasing the labour force participation of women in the Northwest.

The picture of family labour force activity in the Northwest (Table 17) mirrors that of men and women in the area. Except in two Indian communities, northwest husbands participate in the labour force at rates much higher than the provincial average and wives participate at a much lower rate. In accord with the pattern noted above, wives in Stikine A participate in the labour force at rates higher than in other communities and districts in the Northwest.

Unemployment rates in the northwest study area are summarized in Tables 17 and 18. Historically, men have been unemployed in the area at rates below the provincial average and women at rates higher. Native Indian unemployment has ranged from two to three times that of non-Indians in the region. Employed husbands and wives are out of work at rates lower than

those for men and women generally. This historical picture is, of course, completely changed in 1982 and 1983 due to the economic recession. Between 1976 and 1982, the male unemployment rate has jumped from 7.9 to 13.8 and that of females from 10.1 to 12.4 (Table 18).

Livelihoods and Income

Over half the working people in the northwest study area work in just three major industries (Table 19), at least in 1971 which is the most recent data available. Manufacturing employs the most people (most of this in sawmills). Community, business and personal services employs the next largest group of people; these would be people in community services, in small retail businesses and in small service businesses, such as hunting guide-outfitters. The third major employer in the Northwest is the forestry industry in which most people are involved in logging operations.

The remaining employment in the Northwest is spread throughout the other major industrial categories. Of note, however, is the small number of tradesmen employed in the area and the miniscule amount of employment in agriculture and fishing and trapping. It must be mentioned at this point that, in order to show up in these statistics, a person must be in the labour force; an individual who runs a subsistence operation (ie. neither receives nor pays him/herself a wage) would not appear in these statistics. Although the exact numbers are not available, it is known that there are people engaged in such subsistence operations in the Northwest. Consequently, there are likely more people who gain their livelihood from agriculture and hunting and trapping than the figures would suggest.

The most recent information on income in the northwest study area is from 1978 and 1979 (Table 20). During those years, the average income in Stewart and the Stikine was above that in

the rest of the province, while the average income in Kitimat-Stikine A was considerably lower. Incomes rose during those two years so that the average income tax return showed an income of almost $16,000 in Stikine, $13,000 in Stewart and $9,000 in Kitimat-Stikine A. Average provincial income in 1979 was around $13,000.

The higher incomes reported in the Stikine district can probably be attributed to employment at the mine in Cassiar. The incomes in Kitimat-Stikine A, which are $4,000 per year less than the provincial average, probably reflect the number of subsistence operations in the area. People involved in a subsistence type of livelihood have far less cash income requirements than people involved in the wage economy.

One final comment on incomes is that the Revenue Canada statistics do not likely include many returns from status Indian people in the Northwest. Under the terms of the Indian Act, income earned on reserve is not subject to Federal income tax and, thus, would not be reflected in the figures used here.

Living in the Northern Communities

To live in any one of the northern communities in the northwest study area is to live differently than in Terrace, Kitimat or Vancouver. Housing, utility services, school, medical care, access to government services are all different in the north.

Table 21 summarized information from Census Canada on housing characteristics in the northwest study area in 1981. Like 64% of the dwellings in the rest of the province, most of the occupied dwellings in Stikine A and on the Indian reserves are owner-occupied. However, in Stewart and Kitimat-Stikine A, almost twice as many dwellings are rented. In B.C. in 1981, 36% of occupied dwellings were rented, compared to 66% of Kitimat-

Stikine A and 72% in Stewart.

Household occupancy figures also show some differences from provincial averages. The average number of persons per household in 1981 was below the provincial average of 2.7 in Kitimat-Stikine A, but above average in Stikine A and Stewart and twice as large on the Indian reserves.

Census Area/Community	Average No. Persons per Household
Kitimat-Stikine A	2.6
Stikine A	3.1
Stewart	3.1
Tahltan Band	4.2
Iskut Band	4.8
Takla Lake Band	5.6

A recent study of northern northwest communities provides information on other aspects of northern living.(12) A comparison of hydro hook-ups with the housing stock indicates that many houses in the region are either entirely without electricity or supply their own. The electric service that is available is all diesel-generated in each community. A similar comparison of residential telephone hook-ups and housing stock indicates that many households are without telephone service. Some households and the community of Bob Quinn Lake have radiotelephone service only. Telephone service is provided by Northwestel, headquartered in Whitehorse in the Yukon. Although exact figures are not available at this time, it appears that many dwellings in the northern communities are without running water or indoor plumbing. Most of the communities have limited water services and none have sewage disposal systems. Most households must drill their own wells (costs up to $10,000 in Dease Lake) and install their own septic tanks if they want these facilities.

Although all the communities have nursing centres, most of them are served by doctors and dentists who travel to them. Serious illnesses and accidents must be handled by air evacuation to distant medical centres. Except in the case of Cassiar, leaving the communities is, as well, the only way to be educated past Grade 10 in the northern zone of the Northwest. There are no complete high schools, vocation or college facilities between Terrace and Cassiar. A final note concerns entertainment. Cinemas are non-existent and residents in many communities complain of poor radio reception. In compensation, television signal receiving dishes and video and stereo technology provide some access to audio-visual entertainment.

Summary

The preceding discussion has indicated that the people and the communities of the northern part of the northwest study area differ in many respects from the rest of the province. A very important point to keep in mind is that, while some aspects of northern life may seem most unappealing to people accustomed to the urban lifestyle of Vancouver Island and the southern mainland, the people in the Northwest are there by choice and a great number of them are there because it is different. Studies of the area and conversations with current and former residents all confirm that the majority of people like living where they do - there is, apparently, no life like it.

3.4 Notes on the Indian Land Claims

Because the vast majority of the Northwest falls within the territory encompassed in the comprehensive land claim of the Association of United Tahltans, this brief section will offer some background notes on land claims in general and on the history of the Tahltan claim. It seems important to explain the background to the land claim issue because a consistent refrain

from a very broad range of northwest residents and officials is that the land claim should be dealt with in one way or another before any large scale developments proceed.

In 1867, the British North America Act assigned to the federal government responsibility for Indians and Indian lands. From about 1870 to the present day, the federal government has exercised its responsibilities via the provisions of the Indian Act. Throughout most of this time, persons recognized as Indians have had the legal status of wards of the government. A branch of the federal public service, currently the Department of Indian and Northern Affairs has been assigned responsibility for managing the affairs of Indian individuals and groups, particularly their assets.

In its dealings with Indian people, the federal government generally has acknowledged that, because Indians were the original occupants of the country, non-Indian use of the land and its resources required that some form of compensation be paid to the Indians. The treaties which were signed with Indian groups from Ontario west to Alberta and north to the Territories set down the rights and benefits Indians received in exchange for extinguishing their interests in the land. One such benefit was the setting aside of tracts of land to be reserved to the Indians' exclusive use. In British Columbia, however, no treaties have ever been signed between the federal government and the Indian tribes, with the exception of a few bands in the northeast corner of the province whose ancestors signed Treaty 8 and some bands on Southern Vancouver Island whose treaties with the Colonial government have been recognized by the courts.

Two principal groups of Indian claims have developed over the years. Specific claims are those claims which relate to the management and/or wrongful taking of Indian land and other assets and to the fulfillment of treaty obligations. Comprehensive claims are those claims based on the traditional use and occupancy of the land by Indian people. Comprehensive

claims exist where government has not extinguished Indian interest in the land through a treaty, such as in British Columbia.

As the federal Office of Native Claims has commented, native claims respecting title to the land have been formally advanced for well over 100 years in British Columbia.(28) According to the Office, they basically take one of two forms. The first consists of a demand for formal legal recognition of a subsisting title and the rights that flow from it. The second is a demand for adequate, fair compensation for the loss or extinguishment of this title. In British Columbia, the Indian people and their organizations use the words "aboriginal title" and "aboriginal rights" in discussing their claims.

In its policy statement on comprehensive claims, the federal government has stated that, since 1973, it has operated under a policy that acknowledges Native interests in certain land areas claimed and that allows for the negotiation of settlement for claims where these interests can be shown not to have been previously resolved.(29) The policy statement continues that, because of historical reasons, there are areas in which Native people clearly still have aboriginal interests which have not been dealt with by treaty nor by any specific legislation that took precedence over those interests. The federal policy is to exchange undefined aboriginal land rights for concrete rights and benefits, without ignoring or arbitrarily infringing upon the rights of other citizens. Finally, the position of the federal government is that, where claims fall in provincial areas of jurisdiction and where provincial interests and responsibilities are affected, provincial governments must be involved in claims negotiations in order to arrive at fully equitable settlements.

The federal government has accepted eight comprehensive claims from Indian groups in British Columbia, including that of the Tahltan people, and is reviewing eight others. Following its policy on such claims, the federal government has stated that

the government of the province of British Columbia must be involved in claims negotiations. In contrast, the historical and current position of the province of British Columbia is that aboriginal title does not exist in the province and that it cannot entertain land claims based on the concept of aboriginal or native title. The province has maintained for over one hundred years that, even if any aboriginal title or interest may once have existed, such title or interest was extinguished prior to the union of British Columbia with Canada in 1871. While British Columbia has participated in specific claims negotiations and settlements in the province in recent years it has maintained its position regarding any responsibility for comprehensive claims. Article 1 of its Terms of Union with Canada provided that any outstanding obligations of the Province at the time of Confederation would be assumed by Canada.

With the relative position of the two governments outlined, it is now possible to sketch the foundations of the Tahltan comprehensive land claim. It was during British Columbia's colonial period that tracts of land began to be set aside for Indians. Following British colonial policy, James Douglas reserved the amount of land that an Indian group indicated was required for its survival but only on Vancouver Island was he able to sign treaties with the Indian groups. Under subsequent colonial and provincial governments, the Douglas reserves were reduced in size and new reserves were created. Following Confederation, the size of reserves and the methods of selecting the land were a constant source of friction between the Province and the federal government, with the latter suggesting about 80 acres per family as a measure in creating reserves (non-Indians at the time could pre-empt 160 acres). Between 1876 and 1908, reserve allotment commissions were charged with laying out reserves, but the recommendations of the allotment commissions were not necessarily accepted by the Province. Both Canada and the Indian Bands sought larger reserves than the Province was willing to confirm. The protests of the Tsimshian Indians were so great that a separate commission was created just to hear their complaints on the land question.

The reserve commissioners finally reached Tahltan Territory in 1905 when Commissioner Vowell allotted three small tracts of land in and around Telegraph Creek as reserves for the Tahltan people. It was at this point that the Tahltan added their voice to the chorus of protest being raised by Indians throughout British Columbia. By 1909-10, Indians in the southern interior and on the north coast were organizing in pan-tribal groups to engage in political battle on the land issue. The protest came in the form of hundreds of declarations and petitions as Indians were prohibited from voting either provincially or federally. In 1910, the Tahltan issued their declaration and formally joined the protest (see Appendix 2).

The last Joint Royal Commission on the land issue operated from 1913 to 1916 in British Columbia; it is often referred to as the McKenna-McBride Commission. It was this commission which in 1916 allotted the rest of the Tahltan reserves (8 more) and also allotted a reserve for the Iskut people near Telegraph Creek. Both levels of government assumed the McKenna-McBride Commission would finally settle the Indian land issue in British Columbia. The Indians did not agree and continued to press their claims until June of 1926 when the Allied Tribes won permission to present a petition to Parliament. A special Joint Committee of the House and Senate heard testimony in 1927 but ruled that Indian claims based on aboriginal title had not been established. The Committee recommended that the matter should be regarded as closed, but than an award of $100,000 a year be made to B.C. Indians in lieu of treaty payments. Parliament also at that time amended the Indian Act to prohibit Indians collecting money for the pursuit of land claims. There the matter stood until 1951 when this prohibition (and the prohibition of potlatches and spirit dances) was not included in a revised Indian Act. After 1951 up to 1973, the B.C. Indian chorus on the land issue grew in volume again. When the Supreme Court of Canada basically issued a split decision in the Calder case (the Nishga land claim), the federal

government acknowledged that aboriginal title and rights have some validity and supported Indian groups in formally filing claims with the newly created Office of Indian Claims. As of 1983, almost all of British Columbia is included in comprehensive land claims filed by Indian groups throughout the province.

4.0 SOCIO-ECONOMIC IMPLICATIONS OF THE DEVELOPMENT SCENARIO

This chapter deals with the socio-economic implications of the given set of mine projects, including related infrastructure and power supply options. The implications of the various settlement options associated with the development will be dealt with in Chapter 6.

4.1 Manpower Demand

Table 4.1 presents the estimated construction and operating manpower demand for the hypothetical development scenario. A substantial proportion of this demand would be for skilled tradesmen, mostly in the trades of heavy duty mechanics, electricians and millwrights. Roughly 70 percent of the average open-pit mine workforce, however, is in the semi-skilled and unskilled categories. This scenario would result in a dramatic increase in demand for both skilled and unskilled workers by the late 1980's.

4.2 Manpower Supply

A certain proportion of the labour demand created by the development scenario could be met by the northwest labour force. However, it is clear that the lion's share of manpower supply would have to come from outside of the northwest region. A rough projection of manpower supply in the year 1991 gives some idea of the numbers involved.

As shown in Table 4.1, potential direct mine employment by 1991 is estimated at 4,185. If secondary employment multipliers are applied to this figure (similar to those used in the N.E. Coal Regional Impact Analysis - 0.35 for secondary construction and 1.5 for secondary operating employment),

TABLE 4.1

Potential Direct Manpower Demand

Project	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
UTCHO CREEK																		
construction	360	540	450															---
operating			90	450	450	450	450	450	450	450	450	450	450	450	450	450	450	
DANAC																		
construction			340	560	390													
operating					64	320	320	320	320	320	320	320	320	320	320	320	320	320
ETAIN																		
construction				280	420	350												
operating						70	350	350	350	350	350	350	350	350	350	350	350	350
ED CHRIS																		
construction				300	450	375												
operating						75	375	375	375	375	375	375	375	375	375	375	375	375
LAPPAN																		
construction				1000	1500	1250												
operating						250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
SCHAFT CREEK																		
construction						960	1440	1200										
operating								240	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
AGLEHEAD																		
construction									200	300	250							
operating											50	250	250	250	250	250	250	250
USTUT																		
construction											280	420						
operating												70	350	350	350	350	350	350
TIKINE																		
construction															360	540		
operating																90	450	450
TOTAL	360	540	880	2590	3274	4100	4185	4185	4145	4245	4525	4865	4545	4545	4905	5175	4995	4545

additional indirect and induced employment of 4,898 is derived. So the total demand for manpower, direct, indirect and induced, created by the scenario by 1991 could quite conceivably be in excess of 9,000.

To gain some appreciation of what the supply might look like in the Northwest, the 1981 regional population must first be examined. As shown in Table 4.3, the total population for the Stikine and Kitimat-Stikine Regional Districts, as well as Prince Rupert City, was 60,550 in 1981. The working-age population (ages 15-64), however, was only about two-thirds of this number. If a 75 per cent labour force participation rate and a 7 per cent unemployment rate for the working age population were assumed, the unemployed labour force in northwest British Columbia would number just over 2,100 (these assumptions are based on historical participation and unemployment rates). Even if a substantial growth rate of the northwest labour force over the ten year period 1981-91 were assumed, it is clear that the available

Table 4.2

Development Scenario Manpower Demand, 1991

	Direct Employment	Multiplier	Indirect Employment	Total
construction	1200	0.35	420	1620
operating	2985	1.5	4,478	7463
Total	4185		4,898	9083

supply of manpower in the Northwest would fall far short of the demand associated with the development scenario.

Table 4.3

Estimated Regional Unemployed Labour Force

	Total Pop. 1981	Pop. 15-64	Labour Force (assuming 75% part rate)	Unemployed Labour Force (assuming 7% unemployment)
Kitimat-Stikine Regional District	42,400	28,307	21,230	1,486
Stikine Regional District	1,953	1,206	905	63
Prince Rupert	16,197	11,112	8,334	583
Total	60,550	40,625	30,469	2,132

4.3 Labour Flows

A conclusion that can be drawn from the preliminary analysis outlined above is that the demand for manpower associated with the development scenario would outstrip the supply in the northwest region. This would in turn, result in significant in-migration to the region. The population implications of this are examined in more detail in Chapter 6. A large influx of newcomers as a result of mine development also has serious implications for labour force and community stability in the region. These questions are addressed in the following chapters.

4.4 Regional Implications

While the various options for locating the workforce and associated population for each mine project would have important consequences for both the northern and southern

zones of the northwest region, the impact of the development itself would be much more pervasive in the northern zone for several reasons. Most fundamentally, the minesites are located in the northern zone so direct impacts on land use would be experienced firsthand in this area. In addition, the economy and population of the two zones are very different. A number of the communities in the southern zone have economies based on relatively well-developed industrial, commercial and service sectors. Wage employment is the norm as in most British Columbia communities. Although population densities do not reach the levels of the lower mainland, over 90 per cent of northwest residents live in the southern zone communities.

By comparison, the northern zone has one of the lowest population densities of any area in the province. The population is rural and significantly native Indian. A wage economy has made only limited inroads into the area which is dominated by subsistence and independent commodity production, the former for the most part being native food fishing and hunting, the latter, being mainly trapping and guide-outfitting. As a consequence, any impacts on the fish and wildlife resources resulting from mine developments would have an immediate ripple effect on the economic base of the resident population.

4.5 Implications for Local Resource Users

The lack of baseline data, on both wildlife resources and their utilization, makes any quantitative assessment of the effects of mine developments on resource supply and harvest patterns impossible. A review of the various components of the development scenario by government resource agencies sheds some light on the focus of any future assessment and the types of data that would be required. A detailed summary of this review is available in the Environmental Overview Report.(21)

For the Northwest, there is a shortage of the most basic data on species present in the region, their population levels, habitat locations, preferences and migration patterns. In addition, there is no documentation of the number of people dependent on hunting and/or fishing for food supply or the extent of non-registered trapping, not to speak of the actual locations and patterns of hunting, fishing and trapping activities. This type of information will be essential for any future social impact assessments of resource developments in the Northwest.

What can be said is that adverse impacts on resident fish, game and furbearer populations would occur, in part as a consequence of habitat destruction caused by minesite development, road and/or railway access routes as well as transmission line rights-of-way, but also to a large extent as a result of increased pressure on these resources because of improved access to hunting, trapping and fishing areas. These impacts would have serious social implications for Tahltan, Gitksan-Carrier and Nishga inland food fisheries and, of course, impacts on salmon stocks would also affect the commercial coastal fishery.

Perhaps even more significant are the potential impacts on game stocks upon which a proportion of the Tahltan Indian population depends for their food supply. The Association of United Tahltans argue that the completion of the Stewart-Cassiar highway in 1972/73 resulted in "outsider hunting" which substantially reduced caribou, sheep and moose populations.(45) They also charge that construction of the B.C. Railway grade had a similar effect on the sheep population in the Klappan River area and on caribou in Gnat Pass. It is claimed that these two projects resulted in game becoming difficult to obtain in the area which, in turn, caused hardship for those Tahltans dependent on game as their primary source of food.

4.6 Employment Opportunities

As indicated in Table 4.1 the direct manpower demand of the development scenario could potentially exceed 4,000 by 1989. Since roughly 70 per cent of the operating workforce of the average open pit mine comprises semi-skilled positions not requiring a great deal of time for training, employment on the various projects could be available to virtually the entire labour force in northwest British Columbia, regardless of skill levels.

However, a number of intervening factors would affect the proportion and distribution of regional hires. Most fundamentally, the choice of a settlement option for each project would have an effect on the numbers of regional residents seeking mine employment. In cases of settlement options which involve commuting schemes from existing communities, the available labour pool would be determined by the number and locations of "pick-up" points. In the absence of commute programs, new town options would restrict the "local hire" proportion of any particular mine workforce to those regional residents willing to relocate.

The proportion of regional hires would also depend on the size of the local and regional labour force. There is evidence to indicate that the size of the northwest labour force could be substantially expanded given an increase in the participation rates of native Indians, women, and youth.

Native Indian leaders in the region state that industrial development in the North is usually accompanied by unfulfilled promises of jobs for native Indians. They argue, however, that future training programs and employment opportunities related to industrial development should not be externally imposed but that, instead, the Indian role in economic development needs to be treated as part of comprehensive discussions on land claims.(45)

The labour force participation rates of women in the Northwest are lower than the average for British Columbia. A recent study in the southern zone of the northwest region found that there are a number of barriers to female labour market entry.(6) While there are indications that evidence of overt discrimination against women in hiring practices is diminishing, the report suggests that "systemic discrimination" is still evident, especially in occupations which are "nontraditional" for women. An example given is that of unrealistic height and weight requirements for jobs. The generally inadequate level of childcare facilities is also pointed to as a serious obstacle to female participation in the labour force. Finally, training opportunities outside of the Terrace and Prince George areas were viewed by respondents to a survey to be extremely limited. The report's authors conclude:

> "Current and projected skill shortages are heavily concentrated in the occupations predominantly staffed by males. The entry of women into these non-traditional areas could markedly reduce costs associated with bottle-necks created by skill shortages."

They add that the nature of the labour market barriers mentioned above requires new initiatives from both public and private sectors.

The limited number and locations of training courses were also seen as obstacles to increasing the participation rates and employment levels of people who are below the age of 25. It was noted that drop-out rates from the public school system were relatively high in the Northwest. This is significant given that the highest incidence and duration of unemployment is among young people with the poorest education. Respondents commented that pre-apprenticeship programs were inadequate and complained that many secondary school graduates had not taken the required courses to gain entry to apprenticeship or on-the-job training. Pre-apprenticeship programs have recently been replaced by

Training Access (or TRAC) programs which provide modular training in the apprenticeable trades and which are designed to address these kinds of problems. The report suggests that there is a need in the Northwest for more labour market information and career counselling for youth. Work experience programs, however, are showing some success in B.C. schools and are gaining momentum in the northwest region. In addition, the authors of the report referred to earlier argue that training programs should be targeted on "drop-out" youth.

In terms of the development scenario being considered in this report, the continued existence of barriers to the entry of native Indians, women and youth into the labour market would not only preclude the hiring of significant numbers from these groups, but would also act as a constraint on the size of the regional labour force and the number of regional residents available for mine employment. To the extent that barriers exist, the selection processes and hiring practices of mining companies, no matter how non-discriminatory, would have little effect on increasing the proportion of "local hires".

Finally, government policy objectives are a key factor in determining the proportion of local hires to the extent that they encourage regional hiring through various financial aid, training and support service initiatives.

The positive impacts of employment opportunities are potentially most dramatic for the small established communities in the northern zone where unemployment and underemployment are chronic problems, especially for the native Indian population. The Association of United Tahltans estimated unemployment for the Iskut Band at 80 per cent and 95 per cent for the Telegraph Creek Band in 1982.([45]) The accessibility of mine employment to residents of northern zone communities would depend on the settlement option selected for housing the workforce. In some cases, existing communities in the northern zone are not within daily ground-based commuting distance of minesites. This would

indicate that, for some northern zone residents, participating in a mine workforce might involve either relocation to a new town or, possibly, some form of block-time commuting arrangement.

During the construction phase of resource projects, there could be some obstacles to the employment of northern zone residents. Construction work normally requires a large proportion of highly skilled and, for the most part, unionized tradesmen. Northern zone residents who do not possess journeymen papers or qualifications would likely have a difficult time securing employment.

The size of construction contracts could present another obstacle. To the extent that tendered contracts are for large-scale jobs, small local contractors might find it difficult to compete with larger companies located in regional or southern urban centres. In the case of the Northland Development Corporation, a number of small contractors in northwestern Saskatchewan combined forces in order to form a large enough unit to undertake a large part of the construction work for the Cluff Lake mining project.([43]) Without a similar strategy on the part of local contractors in the northern zone of northwestern B.C., a large proportion of the construction work might be awarded to non-local contractors that would hire workers from union halls located in their own areas.

Policies are needed to ensure that local residents would be able to obtain work on mine projects. Experiences elsewhere have shown that when local residents are unable to obtain employment, or obtain only unskilled jobs, resentments between residents and workers imported from outside of the region can lead to serious labour and social conflict.

4.7 Local Participation in Planning

Spokesmen for a wide range of native Indian, union and other public interest groups in the northwest region argue that regional residents should be involved in the planning and decision-making processes for development projects which directly affect them. For native Indians, this issue becomes focused on land claims. While the non-Indian spokesmen, by and large, justify their demands for local participation in decision-making on commonly accepted liberal democratic notions, the justification for native Indian participation rests with their relationship to the land which they have traditionally occupied and utilized. This relationship is inseparable from, and permeates all aspects of, their religio-cultural system and involves the right to utilize, but also a responsibility to preserve and protect, their land's resources. It is this guardianship type of relationship which defines their position with respect to resource development. Thus, "settlement of land claims" does not, for Indian groups, mean solely the negotiation of terms and conditions for relinquishing their title to land areas. On the contrary, it means recognition of their rights and responsibilities by governments and defining the relationship between (in the case of the Tahltans) the Association of United Tahltans, governments and developers in the planning and decision-making process for resource development and management.

The northwest development scenario could result in an intensification of discussions between governments and local Indian representatives on the issue of land claims. In the absence of serious discussions, Indian groups can be expected to vigorously oppose all mine projects and related infrastructure to the extent that these impact upon lands within the boundaries of their land claims.

As earlier noted, the federal government has accepted, in principle, that the land claims of the Nishga, Kitwancool, Gitksan-Carrier, Haisla and United Tahltans have some validity and are worthy of negotiation. The Kaska-Dene land claim is currently under review. Social agency reviewers of the development scenario point out that it is crucial for representatives of the relevant native Indian groups to be involved in the planning process of northwest development. This will have to include those groups whose land will be affected by linear developments as well as the land where mine projects might be located.

4.8 Other Issues

The construction phases of mine and infrastructure developments could have serious impacts on existing communities in the northern zone. While any interactions between construction camps and existing communities could have the positive impact of stimulating the local economy, the relationship could develop as a two-edged sword. Social agency representatives anticipate increases in social service and policing caseloads in those communities which are accessible to construction workers.

5.0 FRAMEWORK FOR EVALUATING SETTLEMENT OPTIONS

5.1 Settlement Options

The regional implications of mineral development in northwest British Columbia depend to a large extent on the choice of settlement options for housing the workforces of mine projects. The settlement options evaluated fall into three general categories:

1) expanding communities in the northern zone;
2) developing new towns in relatively close proximity to minesites;
3) locating workforces of mine projects in southern zone regional centres with workers commuting to minesites on a block-time rotation basis, along with a supplemental commuting stream involving residents of northern zone communities.

For a detailed discussion of the various settlement options associated with each mine project, see the report entitled, A Settlement Strategy for the Northwest.(26) A brief summary of the options is provided in Appendix 3. The locations of potential town sites and mine camps considered in the above report are shown in Map 2.

5.2 Social Criteria for Evaluating Options

In order to provide a preliminary analysis of settlement options, a number of social criteria were developed as a framework for the assessment. It should be stated at the outset that no attempt is made in this report to outline or define overall social development objectives for the people in the northwest region of the Province. The preceeding discussion of regional social issues highlights what might be described as a fairly widespread feeling of alienation in the Northwest. Residents, to some extent, feel cut off from the processes which

result in decisions affecting social and economic development in the region. It is clear that social development objectives cannot be considered in isolation from the concerns and goals of regional residents.

Settlement options are evaluated primarily from the perspective of their implications for distributing the labour force of the potential mines and the consequent population growth. Options which provide an equitable allocation of social benefits and costs among communities are best-case situations. As pointed out earlier, rather than examining the Northwest as a homogeneous region, it can be better understood if examined as two relatively distinct regions, both in terms of the demographic characteristics of the population and the size and nature of the communities.

Existing Economic Base

In the case of the small, northern zone communities, alternative settlement options are evaluated in terms of their likelihood of impinging on the established economic base of long-term residents, most of whom are Tahltan Indians. While all options will result in costs to local residents in this regard, the degree of impact varies between options. Settlement options least likely to have negative impacts on existing resource harvesting activities are favoured.

Employment Opportunities

The mine developments, however, do present the potential for employment and income benefits to local residents. To some extent, income gains through mine employment might compensate for economic losses in resource harvesting activities (hunting, fishing and trapping). However, the social and cultural implications of a wage economy would be considerable and Indian people might well feel these are 'costs' which would

outweigh the economic benefits of industrial employment. While opportunities for participation in a mine workforce would provide local residents with a wider range of employment alternatives, the degree of participation which could be achieved would depend upon the attraction of mine employment to local residents and the development of recruitment and training schemes which encourage local participation.

Labour Force Stability

Maximizing local participation in the potential mine labour force of northwest B.C., in terms of both northern zone communities as well as southern zone regional centres, would contribute to labour force stability in the region. Studies in Canada and B.C. have repeatedly shown that labour turnover in northern resource communities is high for a number of reasons, most notably, the tendency for a large proportion of the workforce to be young, male, single, highly mobile and with no intention of establishing permanent residence in the north. Regional residents, on the other hand, have already established a commitment to the locality. Labour turnover and its associated economic and social costs to employers and communities can be expected to be reduced to the extent that a regional pool of labour for mine employment can be developed. Programs which serve to expand regional labour force participation through recruitment and training of working-age categories of people with traditionally low participation rates (women, native Indians, those with low levels of formal education) would further enhance this objective.

Community Stability

From the perspective of community development in the Northwest, potential population growth and social change associated with the development scenario could enhance both the

social and cultural environments of existing communities. At the same time, communities housing mine workers and their families would experience both direct and indirect income benefits from mine developments, as well as a degree of diversification of their economic bases. However, population growth is only desirable to the extent that any given community possesses the resources and capacity to manage growth and its social effects. In the case of radical population growth, community resources can be taxed beyond their limits. Established patterns of "getting things done" in the community can be disrupted and the existing leadership undermined without being replaced in the short-term by new leaders. These effects can be overwhelming for small rural communities in particular. This is especially so in the case of an influx of a more urban-oriented population with a different approach to community life and the countryside than established residents. The breakdown of existing community networks and their attendant forms of informal sanctions on members of the community, combined with resentments between two distinct socio-economic groups, can transform a cohesive community into a town riddled with conflict.

The rate of population increase that is manageable varies from community to community. It depends on the size of the community, the number and range of resources that can be mobilized, and the characteristics of the in-migrating population. Although anything over a 10 percent annual rate of population growth is usually referred to as "radical",(52) the social adaptablity of any particular community to growth would have to be examined individually. In general terms, however, a slower, relatively constant rate of growth is much more conducive to being managed by a community, as it allows for planning, the development of new resources, and accommodation of social change. Stable and incremental growth, as opposed to radical growth, has a tendency to maintain or even foster effective leadership and a sense of community cohesiveness which facilitate conflict resolution, decision-making and the ability to mobilize community resources.

6.0 SOCIO-ECONOMIC IMPLICATIONS OF SETTLEMENT OPTIONS

This chapter will provide an overview of the socio-economic implications of settlement options associated with the development scenario.

6.1 Northwest Communities: Ability to Accommodate Growth

6.1.1 Community Adaptability

The option of expanding existing communities is, in some respects, preferable to the option of building new towns. However, in considering this option, the ability of a community to manage the impacts of population growth must be examined and evaluated.

In the case of northwest British Columbia, there are three small communities in the northern zone that could be considered as potential residential communities for the workforces associated with particular mine projects. Specifically, there is the possibility of expanding the town of Telegraph Creek to house workers from the Schaft Creek mine. The Red Chris mine could be serviced from the community of Iskut, and the workers at the mines at Eaglehead Lake, Letain Lake and Kutcho Creek could reside in the town at Dease Lake. Several regional centres in the Northwest could also be considered as potential residential communities given a long-distance commute program. These communities include Prince Rupert, Terrace, Smithers, Kitimat, and Stewart. The purpose of this section is to assess the abilities of these communities to deal effectively with population growth and social change.

Concern with the social adaptability of communities is based on an underlying assumption that community stability is preferable and more desirable than the consequences of rapid transformation of community structure and processes. It should be noted, however, that stability itself is viewed as a process rather than a state. It is a process whereby the existing

organizational structure of a community, including both formal and informal social networks, is able to mobilize human and physical resources in order to manage social change. In other words, adaptability is a concept which attempts to identify the degree to which a community can exert control over the effects of external social forces rather than being controlled by them.

In a study entitled Resource Community Planning: Framework for Choosing Settlement Options,(52) five factors were found to influence community adaptability:

- nature of the change - the size of the resource development and its characteristics in terms of technology, industry and labour force as well as the rate of its growth and the policies it applies to its workforce and community;

- desirability - the community's perception of whether radical change will bring benefits to the community;

- community resources - the number and extent of "tools" - e.g. social service and community organizations at the disposal of the community to assist it in directing and managing growth;

- community capacity - the extent to which the community is able to translate its desires/goals into actions and to bring its resources to bear in managing change; and

- government policy responses - the extent to which senior government intervenes to change perceptions, increase community resources, regulate the agent of change (i.e. the resource company) or increase community capacity to manage the change.

It is clear that the characteristics of a resource development, most fundamentally its size, will have a great deal to do with the degree of impact on a particular community. The

larger the level of in-migration resulting from resource development, the greater the strain placed on community resources.

To effectively manage change, it is necessary (but not necessarily sufficient) that a significant proportion of the population see the resource development and its consequences as providing benefits to the community. Benefits might be perceived as business or employment opportunities or as increased levels of health, education, recreation or commercial services. It can also be stated that the greater the level and comprehensiveness of existing services in a community, the more likely it will be that the community will be able to manage the potentially disruptive effects of sudden population growth. Finally, a community's ability to manage sudden or radical social change will depend on the level of cohesiveness among residents. To the extent that there exists a strong sense of community pride and a high level of citizen participation in community affairs, a community can be flexible in accommodating social change.

The capacity of a community to manage growth relies upon the combination of the perceived desirability of change and the level of resources that can be drawn upon. Attitudes to change, however, are of primary importance. If a large proportion of the established population of a community is not favourably disposed towards change, the existence of social services and community organizations, no matter how numerous or comprehensive, will do little to facilitate community adaptability. On the other hand, to the extent that sudden growth or change is generally perceived as legitimate and beneficial, there exists a basis for mobilizing resources.

Finally, while little will be said about government policy responses at this time, it should be pointed out that this factor is crucial in determining the degree of change and the financial and service resources available to a community for the purpose of managing change.

6.1.2 Communities in the Northern Zone: Expansion as a Settlement Option

Population Change

An annual population growth rate of 10 per cent or more is generally considered to be radical growth.(52) As pointed out in Chapter 3, the existing "northern communities" in the study area are very small. The current population of Telegraph Creek is estimated at approximately 300, Dease Lake at 500 and Iskut at 300 (Appendix 1, Table 2). Clearly, if these communities are to be considered as possible townsites for housing the population impacts of the Schaft Creek, Red Chris and Kutcho/Letain/Eaglehead mines respectively, they will experience radical growth and social change.

Telegraph Creek's current population is a small fraction of its earlier peaks but double a 1967 estimate of 140-150(25). The current population of 300 would indicate an average annual growth rate of approximately 5 per cent over the past 15 years. The population of Telegraph Creek is not expected to undergo dramatic growth over the next decade. Even an optimistic projected growth rate of 5 per cent per year would result in a 1992 population of about 500. In the event that Telegraph Creek is expanded to accommodate the Schaft Creek mine workforce of approximately 1200, the population impact on the community would represent an overwhelming rate of growth.

A 1967 population estimate of 100 for Dease Lake would indicate an average annual growth rate of approximately 12 per cent over the past 15 years.(25) This growth was in large part a response to construction of the Stewart-Cassiar highway. While the population impact of housing the 1050 workers of the Kutcho Creek, Letain and Eaglehead workforces in Dease Lake would not be quite as dramatic as that of the Schaft Creek workforce on Telegraph Creek, it would still be overwhelming for such a small community.

Although the current population of Iskut is estimated at 300, a little over 200 of these people live on an Indian reserve. The off-reserve community is, therefore, less than 100. The Red Chris mine workforce of approximately 375, while considerably smaller than those of other mines, would still have a very large and difficult to manage population impact on a community as small as Iskut.

Desirability of Change

Both Telegraph Creek and Iskut are predominantly native Indian communities. Many of the newer residents have moved to the area because of its isolation. According to one report, the majority of Telegraph Creek's residents, both Indian and non-Indian, are happy with the status quo and would resist any radical changes.(25) In addition, the land claims issue is stated to be of primary importance to Tahltan bands in both communities. Until this issue is resolved to their satisfaction, the United Tahltan Nation has stated that it will oppose any development within the area of their land claim.

Indications are that attitudes toward the prospects of radical growth and social change as a result of mineral development are much different in Dease Lake. This is partly because the community is predominantly non-native and hence the land claims issue does not hold the significance to residents of Dease Lake that it does to those of Iskut and Telegraph Creek. Dease Lake is, however, located within the area encompassed by the Tahltan land claim.

Many of the residents of Dease Lake moved there in order to take advantage of the economic prosperity which they felt would result from infrastructure improvements as well as mine development. The community would, for the most part, encourage any stimulus to the local economy and welcome new employment and business opportunities. Many of the residents

would prefer to see the community expand to accommodate the workforces of new mine developments rather than to have mine employees housed in new towns or on-site camps.

Community Resources

However much it might welcome economic development, the community of Dease Lake would be hard pressed to manage radical population growth. The local Advisory Planning Commission has acted as a coordinating agency for community planning and served as a focus for local concerns. But the physical and financial resources which can be mobilized by the community are limited. The level of social and commercial services provided in Dease Lake is low and key physical services such as water and sewer systems are absent.

The expansion of Dease Lake in order to house workers and their families from mines east of the community would essentially amount to the same thing as building a new town. Combined with the distance of potential mine projects from Dease Lake, this reduces the community's attractiveness as a settlement option relative to the option of a new town in the vicinity of the Turnagain River. The same can be said for Telegraph Creek in relation to the Schaft Creek project and for Iskut to the Red Chris project.

6.1.3 Regional Centres in the Southern Zone

Although growth of the mining sector in northwest British Columbia would result in indirect population impacts on regional centres regardless of the ultimate settlement option selected, long-distance block-time commuting arrangements involving regional centres would result in a substantial expansion of one or more of these communities.

Population Change

Estimates of the potential population impacts of mine developments on the southern zone regional centres have been calculated for three different sets of assumptions: a high impact case where all manpower for mine projects (except Adanac) is based in the regional centres and participates in block-time commuting to minesites; a medium impact case where townsites are developed to service the Schaft Creek, Red Chris and Klappan projects, thereby removing some of the population pressure from regional centres; and a low impact case which assumes that only the Stikine and Sustut projects utilize block-time commuting.

It is further assumed that the population impact of the construction phase for each project would fall for the most part on the regional centres as a result of a large proportion of the indirect or induced economic activity related to construction occurring in these communities. The population impact associated with the construction phase, however, is expected to be small in each case because of the likelihood that construction workers would be housed in camps at the minesites.

In order to estimate the potential population impacts of the development scenario's low, medium and high impact cases, a series of employment and population multipliers are applied to the manpower figures presented in Table 4.1. In the absence of multipliers based on actual relationships between various economic activities, employment and population in the Northwest, similar multipliers to those utilized for the impact analysis of northeast coal developments on the Peace River-Liard region are also used here.(22) While the two regions share some important similarities, such as the population size of regional centres, there are some significant differences. For example, the locations of potential minesites are much more isolated in the case of the northwest region. In addition, the multipliers developed for the northeast analysis have yet to be tested and

verified. They, therefore, represent informed "best guesses" and are not intended to be definitive.

Keeping these caveats in mind, preliminary population estimates for the high, medium and low impact cases are calculated as follows: indirect and induced employment are combined in one secondary construction employment multiplier of 0.35. In other words, for every 100 jobs created in the construction phase of each mine project, 35 additional jobs would be generated in the manufacturing and service sectors. As mentioned above, because of the likelihood that construction workers would be housed in camps at the minesites and in most cases would not have intentions of taking up local residence, the majority of these jobs would likely be indirect -- supplying services or other inputs to the mining operations. A much larger multiplier of 1.5 is used to calculate indirect and induced employment generated after mine projects begin production. A significant proportion of this would be employment created by the demand the resident workforce for goods and services.

Population multipliers are then applied to the derived employment estimates. The multipliers are as follows: 0.5 for direct construction; 2.5 for direct operating; 2.5 as well for indirect and induced construction and operating employment.

Table 6.1 presents the total estimated population impact of the hypothetical development scenario. The impact is distributed among northwest regional centres in proportions which reflect their 1981 population shares.

Table 6.1

Possible Distribution of Potential Population Impacts

(High, Medium and Low Cases)

Community		Population Impact 1986	1991	1996	2001
Terrace/Kitimat	high	610	9,460	13,640	13,640
	medium	610	3,430	4,520	4,520
	low	320	850	1,130	2,580
Prince Rupert	high	420	6,450	9,310	9,310
	medium	420	2,340	3,080	3,080
	low	220	580	770	1,760
Smithers	high	120	1,820	2,630	2,630
	medium	120	660	870	870
	low	60	160	220	500
Stewart	high	40	580	840	840
	medium	40	210	280	280
	low	20	50	70	160
Total	high	1,180	18,310	26,410	26,410
	medium	1,180	6,650	8,750	8,750
	low	620	1,650	2,190	5,000

Note 1: Due to rounding to the nearest tenth digit, summation of columns may not equal totals.

Note 2: The high case assumes that all mine projects except Adanac utilize a block-time commute with pick-up points in regional centres. The medium case assumes that only the Stikine, Sustut, Kutcho Creek, Letain and Eaglehead projects employ block-time commuting schemes. The low case assumes that only the Stikine and Sustut projects operate on a block-time commuting basis.

Note 3: It is assumed that the Kutcho Creek project will cease production in the year 2000.

In the high impact case, it is estimated that the potential population impact on regional centres could be as high as 18,300 new residents in 1991, increasing to 26,400 by 1996, while the medium case impacts would be approximately one third of these numbers. The low case would see a much smaller population impact on regional centres.

The June 1981 population of the District Municipality of Terrace was 10,914, and the Town of Kitimat, 12,814. The average annual growth rates of these communities during the 1976-81 period were 1.3 and 1.4 per cent respectively. A 1.5 per cent average annual rate of growth over the period 1981-96 would result in base case 1996 populations of 13,645 for Terrace and 16,020 for Kitimat. As shown in Table 6.1, the estimated potential range of population impacts on the Terrace/Kitimat area is from 1,130 to 13,640 by 1996. Along with base case population growth, the added population impact from mine developments would result in an annual growth rate of about 4 per cent for the high case over the 1981-96 period. In other words, if the population impact were spread evenly over this period, the growth rate would remain below what is normally thought of as "radical". Most of the development scenario growth, however, would occur in the relatively short time frame of 1986-89. The capacity of these communities to accommodate substantial growth over such a short period would depend on their resources and their ability to mobilize them.

The 1981 population of Prince Rupert and Port Edward stood at 17,186. Average annual growth for the period 1976-81 was 1.5 per cent. One study has projected the 1995 population of Prince Rupert/Port Edward at about 22,000.([25]) The mine development scenario could add another 770 to 9,310 to this, which would result in annual growth rates of between 2 and 4.5 per cent. Although the Prince Rupert area could likely accommodate the low or medium case population impacts, physical constraints related to the availability of residential land and airport access problems may place limits on the number of new residents that can be absorbed.

The population of the Town of Smithers and the surrounding area has been increasing at the relatively high rate of 4 per cent per year from 1976 to 1981. The Smithers Community Plan is based on a projected annual growth rate of from 5 to 7 per cent up to 1986. Incremental growth associated with mine developments would be in the range of 220 to 2,630 by the year

1996. Accommodating these additional numbers would likely present little difficulty to Smithers and its surrounding area.

Stewart's population levels have been unstable, responding over the past decade to production workforce levels at the Granduc mine. An additional 70 to 840 residents by 1996 as a result of other mine developments should not present difficulties that the community has not had to deal with in the past. While there may be problems with the capacity of services and facilities in Stewart, the town's past experience with volatile population levels reduces the likelihood of additional population increments disrupting the network and cohesiveness of the community.

Desirability of Change

While no attempt has been made to systematically survey the opinions of residents in regional centres on the topic of mine-related population growth, indications are that they would, by and large, be receptive to the additional employment opportunities.

Forest industry activities represent the primary source of employment in Terrace. While the community also has a well developed service sector, prospects for expansion of the community's employment base in the short to medium term are limited. Diversification of Terrace's economic base through the addition of employment opportunities by means of block-time commuting arrangements would likely be perceived by local residents as a welcome source of high wage employment.

Much the same can be said for Kitimat, a community with a high proportion of industrial workers who would appreciate the added economic stability afforded by alternative sources of industrial employment. The community is eager to diversify its economic base.

Prince Rupert has experienced a decline in employment in both the fishing and forestry industries. These losses will be offset to some extent by employment on grain and coal terminal and related transportation activities. Additional employment opportunities in the mining sector which could perhaps be made possible through block-time commuting schemes would be viewed positively. Local support for such schemes would depend to some extent on the number of new residents it would potentially bring to the community. Opposition could be expected to arise to the extent that in-migration of new residents places pressure on the supply of residential housing lots and contributes to an increase in the price of residential land.

Although a smaller community than the other three mentioned above, Smithers is a trade and service centre serving a considerably larger population base in the surrounding area. The local economy is fairly well diversified, although oriented toward resource activities with forestry being the largest, followed by agriculture. Trade and service industries are also largest employers. Indications are that the existing residents of Smithers and surrounding area would react favourably to further employment opportunities and economic stimulation.

Stewart is the only community of the five regional centres examined that has an economic base dominated by the mining industry. The addition of other mine projects to the employment base of Stewart would contribute to intra-industrial diversification and a greater degree of employment and population stability. The experienced mining workforce in the community would likely welcome alternative employment opportunities in the mining sector.

Community Resources

In terms of social services and facilities, the regional centres are fairly well equipped to manage the

population growth that would be associated with mine developments.

Health facilities in the regional centres are adequate to service the regional population well into the future. From the standpoint of hospitals, all of the communities have good physical plants with excess capacity. This is especially the case for the Kitimat General Hospital. In addition, Hazelton has a new hospital with considerable excess capacity. The hospital in Smithers currently has 5 to 10 extra beds and the Stewart hospital has 10 beds with average utilization currently running at only about 20 per cent.

All of the above communities, except Stewart, have community health centres. A half-time public health nurse renders services out of leased premises in Stewart. Capital construction plans currently include additions to the Prince Rupert and Smithers Health Centres over the next five years.

None of the regional centres are currently experiencing over-utilization problems in public school facilities. There are plans for a new secondary school in Prince Rupert over the next two or three years with a capacity of 750 to 800 students (grades 8 - 12).

It is anticipated that social services in the regional centres would have little difficulty in accommodating the population growth associated with mine developments. A rough rule of thumb is that the larger the community serving as a staging area, the more likely that social service agencies can respond to impacts with more flexibility (i.e., would not have to add incremental staff as quickly). This rule applies as well in terms of the number of communities utilized to house employees of mine projects. In other words, social services could adjust to increased demands with more flexibility to the extent that the workforce is distributed among several communities.

Population increases in the northwest region could also be accommodated by existing court services. There is some flexibility in the present court caseload capacity of the regional courthouses. In the case of Stewart, which is served by a visiting provincial court (sat for six days in 1981), decisions to expand services would be made on a project-specific basis after a sufficient caseload is identified in the field.

The only correctional facility in the Northwest is the Terrace Community Correctional Centre (minimum security). Inmates requiring "medium" or "maximum" levels of security are taken to correctional institutions in the Prince George area. Facilities in Terrace and Prince George are currently operating at capacity levels.

6.1.4 Summary: Capacity to Accommodate Change

A preliminary social adaptability analysis indicates that the population impacts associated with the mine development scenario would likely prove overwhelming to the small communities in the vicinity of mine projects if these towns were targeted as staging areas for housing mine workforces. In addition, residents of Telegraph Creek and Iskut would not likely be receptive to expansion of their communities to accommodate mine workers, although resolution of the land claims issue would generally have a significant effect on local attitudes to large resource development projects. Attitudes to this type of development generally, and population growth in particular, are much different in Dease Lake. Although the community would welcome a rapid increase in population, it currently lacks the resources to effectively accommodate and manage growth on the scale projected here.

The regional centres in the southern zone of the northwest region are much more able to incorporate the mine development workforce and associated population without serious

disruption. In many respects, the added population and employment opportunities would serve as a stimulus and source of economic diversification for all of these communities. While there may be physical limits to the residential expansion capability of Prince Rupert, the other four communities are not anticipated to have any serious difficulties accommodating the additional population as estimated in Table 6.1.

Indications are that residents of these communities would, for the most part, look favourably upon population growth and increased job opportunities. Most social services in the regional centres currently are operating with excess capacity and could be expanded if the need arises (although this assumes that the mine development scenario population is proportionately distributed among the five communities).

In closing, it should be noted that to confirm the tentative conclusions reached in this analysis, it will be necessary to study in detail the relative capacities of each of these communities to mobilize their resources in order to accommodate growth.

6.2 New Town Development

The remainder of the discussion will focus primarily on the comparative socio-economic implications of new town development versus a block-time commuting arrangement involving workers from regional centres. It should be noted, however, that neither of these two options preclude the possibility of residents commuting from small communities in the northern zone to minesites on either a daily or rotation basis.

6.2.1 Communities in the Northern Zone

The establishment of new towns is one of the settlement options being considered for a number of the projects in the development scenario. This section presents an overview of the

socio-economic implications for the northern zone of one or more new towns.

Population Growth

Most fundamentally, new town development in the Northwest would result in significant in-migration to the northern zone. The 1981 population of this area was approximately 5,300 including the District of Stewart. The new towns under consideration would potentially have populations in the order of 2,000 to 3,500 people. Population growth associated with all of the proposed potential new towns could exceed 8,000 by the early 1990's. (For detailed population estimates of potential new towns, see the report A Settlement Strategy for the Northwest).([26])

While population growth in this range does not, on the surface, appear to be excessive for a geographic area as large as the northern zone, the impact of growth is expected to be substantial for a number of reasons.

First, transportation infrastructure in the study area is very limited. New town development would directly result in increased traffic volumes on Highway 37. Residents of new towns would utilize the highway not only because it is the only road access in and out of the region, but also for recreational purposes. This would have both positive and negative impacts.

On the positive side, the increased traffic volumes would provide a stimulus to local businesses in existing communities located on Highway 37, such as Iskut, Dease Lake and Good Hope Lake. The stimulus would be most substantial for those businesses oriented to servicing highway traffic. The tourism sector would also benefit as new residents utilize the many wilderness recreational opportunities available in the area.

On the negative side, new town development and the associated improvements to the regional road network would result in increased public access to fish and wildlife resources. As pointed out in Chapter 4, a significant but quantitatively undetermined proportion of the area's native Indian population is dependent on these resources as a primary source of food. In addition, increased demands for recreational land use could interfere with established traplines in the area and, in the longer term, contribute to reduced stocks. The extent of these impacts cannot be estimated until extensive fish and wildlife inventories have been conducted in the study area.

Social Cohesion/Conflict

The potential also exists for a degree of social conflict arising as a result of new town development. In particular, many residents of existing communities would not readily welcome mining projects at this point in time. New towns would provide additional focal points for any displeasure on the part of established residents who are opposed to development of this nature.

Because of their relatively large size, when compared to existing communities in the area, new towns would likely offer an array of goods and services not available in existing communities which would result, in some cases, in new towns emerging as regional trade and service centers. This potential would be very high for new towns located on Highway 37 at places such as Kinaskan Lake or Bob Quinn Lake. While this would act as a benefit to established local residents, in other ways, it may pose some problems. In the event that residents of existing communities are not successfully incorporated into the workforces of mines serviced by new towns, the possibility exists that a two-tiered system of social stratification could arise based on the different incomes and standards of living of mine employees and non-employees. The potential for social conflict

in such a situation would be exacerbated where the employee/non-employee distinction overlaps other divisions - such as newcomers versus long-term residents, new town residents versus existing community residents, urban versus rural orientation, and, because of the demographic characteristics of the study area, native Indian versus non-Indian. Conflicts could also arise over access to fish and wildlife resources as all of the potential new townsites lie within the comprehensive land claim of the Tahltan Indians.

There are several measures which could be taken to mitigate the potential for social conflict. These would include involving local residents in the planning stage of new mine developments and ensuring that existing residents obtain employment and/or other economic benefits from mine projects. Obviously, any resolution of land claim issues to the satisfaction of the Tahltan Indians would pave the way toward a cooperative relationship between residents of the study area and potential developers.

Social Services

The development of new towns would likely have a minimal effect on social service delivery in the study area. In terms of health care, at this time, there are no acute care beds in the communities of Telegraph Creek, Dease Lake or Iskut. A diagnostic and treatment centre established by the B.C. College of Physicians and funded by the Ministry of Health is located in Dease Lake. A general practitioner operates out of the centre and visits Telegraph Creek and Iskut twice a month. Neither of the latter two communities have clinics or resident physicians.

None of the new towns proposed as settlement options for northwest development scenarios would be large enough to justify hospitals with acute care beds. They would likely have diagnostic and treatment centres with one or two full-time

resident physicians. The impact on health services available to residents of existing communities in the northern zone would likely be low. Serious acute care and surgery cases would continue to be referred to regional hospitals in the southern zone.

School facilities in Telegraph Creek and Dease Lake currently provide for kindergarten to grade 10. New towns with secondary school facilities to grade 12 could perhaps make grades 11 and 12 available to students from Dease Lake and Iskut on a daily commuting basis.

At the present time, Telegraph Creek, Dease Lake and Iskut are serviced by a social worker based in Cassiar. The same social worker also provides financial assistance and family services to residents of these communities, except for status Indians living on reserves. Arrangements may change if social service caseloads in these communities were to increase. However, the Ministry of Human Resources would continue to provide services from outside of these communities until such time as an increase in workload created a need for a full-time presence.

Impacts on the delivery of court and correctional services are anticipated to be small. Dease Lake is, at present, serviced by a visiting provincial court. New towns would not be large enough to justify full-time court facilities and, hence, would also be serviced on a part-time basis. There are currently no correctional facilities in the northern zone and population growth as a result of new town development would not change this. At the present time, there are plans to open a probation office with one officer in Dease Lake. The location of this office may be changed if larger new towns are built.

R.C.M.P. detachments are located in Cassiar and Dease Lake with part-time policing services provided to Telegraph

Creek. New towns would result in a substantial increase in policing services in the northern zone. It is likely that a new detachment would be required for each new town.

6.2.2 Regional Centres in the Southern Zone

The development of one or more new towns in the northern zone of the northwest region would likely have little direct impact on regional centres in the southern zone. Indirect impacts, however, could be substantial and, for the most part, positive. Although new towns would be located at some distance from regional centres, the fact that the southern end of Highway 37 is the primary access point to the northern zone would contribute to opportunities for indirect economic benefits. These could include an array of activities including port developments and contracts with mines for a variety of services. Induced economic activity would also result from an increase in traffic volumes on Highway 37 affecting transportation, tourism, retail trade and service sectors in particular.

6.3 Block-Time Commuting

The following section will address socio-economic factors which generally influence the viability of block-time commuting relative to new town development. The discussion will cover the implications of commuting for: (1) workers and their families; (2) communities; and (3) resource companies. The issues are categorized for the purpose of readability but, clearly, interrelationships exist. For example, worker and family satisfaction may influence community stability and workforce productivity.

Two cases are discussed: workers commuting from regional centres and native Indian workers commuting from northern communities. The latter case will apply to Telegraph Creek and to Iskut in the Northwest. The community of Dease Lake

can be considered to combine elements of both cases. It shares the characteristics of the regional centres in terms of worker/family and resource company issues and it shares the characteristics of the northern settlements in terms of community issues.

The discussion is based on a review of the available literature on block-time commuting. Many of the studies were constructed from a limited data base and considerable speculation was often employed. Also, much of the native literature is based on Inuit studies, whose findings may not readily transfer to the Northwest. Nevertheless, in order to facilitate evaluation of northwest settlement options, this review draws preliminary and tentative conclusions from these studies.

Block-time commuting, as it will be used here, is based on commute operations that have been implemented in northern Saskatchewan. Workers commute by air* from their home communities to work sites at the start of each work period; they commute back at the end. The commuting employees work on a rotation basis in which they are at the work site for seven days. While there, they work twelve hour shifts and reside in a camp. A seven day leisure period then follows for workers to spend in their home communities. The resource companies pay the costs of the commute operations, which include both operating and infrastructure expenses. However, only certain communities are designated as "pick-up" points. Workers living in other communities must commute to these pick-up communities, finding their own transportation and paying the associated expenses.(30,31,44)

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* For a summary discussion of alternative modes of commuting, refer to Appendix 4.

6.3.1 Commuting from Regional Centres

Implications for Workers and Families

The commute option offers workers and their families several advantages relative to the new town alternative. First, workers are able to maintain their residence in existing communities and thereby avoid the disruptive effects associated with relocation. This means that established social networks can be retained and the potential difficulty of establishing new friendships is eliminated. Similarly, the stress often associated with living in a small isolated town,(50) as would likely be the case with a new town in the Northwest, is avoided. A second advantage of the commute option is the generally higher level of community services and facilities associated with existing communities compared to new towns, simply because population levels are normally higher. On this same basis, education and work opportunities for spouses and working-age children are also normally more plentiful.(10) These advantages apply especially to regional centres but even relatively small communities located in well-developed and populated regions indirectly possess these amenities due to their accessibility to larger communities. This accessibility concept appears to be reinforced by the settlement pattern of the Rabbit Lake commute operation in Saskatchewan. While employees reside predominantly in the regional centres designated as commute pick-up points, employees also reside in numerous smaller communities near those regional centres.(8)

A negative feature of block-time commuting concerns separation stress. Some families may experience stress due to the separation between workers and their families during work periods. The longer the rotation period, the greater can be the stress.(48) In addition, there is evidence that a second type of stress can develop. An Aberdeen psychiatric study(42) found that some wives of offshore oil rig workers experienced stress not only when the husband was away but also when he returned home.

The stress seemed to result from the recurring partings and reunions and the consequent implications for the wife's role in the family. During the husband/father's absence for extended work periods, in effect, the wife had to assume his role as head of the family. When he returned home, however, her role in the family became a subordinate one. Work rotation thus also meant role rotation. The resulting stress became so severe in certain cases that serious marital problems were experienced.

The potential family stress caused by block-time commuting can be minimized to the extent that the psychological sense of separation is diminished. Extensive telephone communication between workers and their families is critical in this regard. With respect to worker stress alone, extensive recreation and entertainment facilities, privacy of accommodation, and quality and variety of food are important camp conditions for increasing workers' satisfaction and thereby alleviating stress.(48)

Implications for Communities

From a community perspective, the commute option offers potential for significant advantages. First, community stability may be enhanced. Commute operations mitigate the potential for the boom/bust syndrome, common to single industry towns, by utilizing existing communities as places of workforce residence, and hence, eliminating the need for new town development. At the same time, commute programs work toward stabilizing regional centres by increasing employment and population and by diversifying the economic base. In addition, there may be certain advantages associated with the establishment of service and supply businesses in existing communities relative to new towns. First, business interest may be greater due to a perception of greater community stability. Second, businesses may experience less restriction to entry since individual resource companies have less influence. Finally, businesses may be more financially viable due to economies of scale associated with larger markets.(52)

A second advantage of the commute option concerns infrastructure savings. So long as existing communities have the ability and capacity to accommodate population growth, the overall cost of expanding existing town infrastructure would likely be less than the cost of new town infrastructure.(51) (The incidence of infrastructure costs may vary considerably from case to case, however, depending on what is negotiated in development agreements.) Similarly, existing communities can likely handle a large proportion of growth management on their own; new town development is largely dependent upon provincial government initiatives.(52)

Existing communities could, nevertheless, experience some problems in accommodating population growth. First, if growth is rapid and large, social disruption can be expected if the community's excess capacity in services and facilities is minimal and its ability to manage growth is limited.(51) Second, communities may experience difficulty in financing the expanded infrastructure necessary to accommodate population growth. Where resource developments lie outside municipal boundaries, municipalities have often supported a development without any contribution to their costs from the development company.(48) The complexity of the situation is compounded where more than one community and company are involved, as would be the case for the Northwest. The problem, nevertheless, could be resolved to some extent by using development and property tax sharing agreements.(52)

As outlined in Section 6.1.3, the preliminary social adaptability analysis indicates that, aside from some physical constraints to residential growth in Prince Rupert, all of the regional centres examined could accommodate the rates of growth anticipated and benefit from an expanded employment base. In

certain key areas, such as health, education and court services, current levels of services and facilities, combined with plans for expansion or changes in the future, could absorb a significant proportion of the increased caseload and utilization level associated with population growth. In other areas, such as the array of services provided by the Ministry of Human Resources, growth could be accommodated with little difficulty but would require incremental additions to keep up with workloads.

In general, the capacity of social services in the regional centres to accommodate population growth depends to a large extent on the distribution of growth. Agencies would be able to respond with more flexibility to the extent that growth is distributed among regional centres rather than concentrated in one community.

Population growth in northwest regional centres would result in increased demands for the services of Northwest Community College and British Columbia's Knowledge Network telecommunications system. An examination of current and projected demands for post-secondary services and facilities will be a necessary component of any future detailed social adaptability analysis of northwest communities. In addition, certain key social services often provided by the private sector will have to be examined. These include services such as daycare, transition houses and crisis centres.

Implications for Resource Companies

Block-time commuting can expedite the settlement process because it precludes the need to construct new towns. Companies can normally tap a relatively large labour force as workers come from a number of already existing communities. This is especially so if the commuting mode is by air. The implication of this is that a relatively stable workforce can be established. At the same time, however, companies may lack the ability to secure "company" workforces, as they can with new

towns;[52] thus, a degree of uncertainty is introduced. Increased competition for labour also adds to company uncertainty and means that companies may find it necesary to augment job benefits in order to attract workers, thereby increasing the cost of the resource project.

Likewise, company expenses for commute operations and infrastructure contribute to the project cost but whether or not these expenses would be greater than those associated with new town development is dependent upon the specific circumstances of each individual case. One generalization, nevertheless, is that the larger the workforce and the longer the lifespan of a resource development, the more financially attractive becomes a new town development. Due to economies of scale, per capita costs of new town construction are normally lower (and levels of community services and facilities are normally higher) the larger the workforce and, therefore, the larger the town. Similarly, more economic use is made of a town the longer the lifespan of a resource project.[52]*

In comparing the company costs of the two settlement options, it must be noted that under the commute option companies might also incur town development costs for an expanded community, in addition to the costs of the commute operation. Consequently, it is important to consider the comparative town development costs of the two options. For the new town option, the community could take the form of either a company town or an incorporated municipality. In the former, the company would be responsible for the costs of constructing and operating the

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* Based on a set of assumptions, projected commute costs and new townsite costs for the Northwest case are outlined in A Settlement Strategy for the Northwest.[26]

town. In the latter, a government authority would be responsible for these functions and the company would be required to contribute to the associated costs. Company payments could include annual payments for property taxes as well as front-end contributions for town infrastructure and housing. For the commute option, the company cost for town development is not so clearly defined since the workers would be housed in established communities. If the communities possess excess capacity in town infrastructure and housing and if the resource developments lie outside municipal boundaries, the amount companies would be required to pay in property taxes and contributions could be relatively small or even non-existent.(60)

The comparative attractiveness of the two settlement options is also influenced by several other factors. First, because of the rigidity of shift scheduling in commute operations, logistics problems may arise. The Rabbit Lake project, for example, has encountered additional costs due to the necessary duplication of certain supervisory positions in an attempt to maintain continuity on the rotation schedule.(44)

A second factor concerns travel time compensation. Only a few companies presently pay their employees for time spent travelling and those that do appear to involve daily rather than block-time commute operations.(23) Nevertheless, companies may find that travel compensation is necessary if they are to effectively compete for labour with companies whose operations are located near to the host communities.

Finally, the effect on worker turnover and productivity is an important consideration. Unfortunately, studies comparing the two settlement options on the basis of this consideration have revealed inconclusive findings. There have been reports, just the same, on factors which positively influence turnover and productivity for a commute operation. These include the following:

1) a short work period (e.g. seven days on and off work) so that family stress and worker fatigue are minimized;(36)

2) a short commuting distance,(52) but conceivably more important, a commuting arrangement that minimizes travel time;

3) a quality work camp, including private accommodations and extensive recreation facilities;(48) and

4) host communities that possess an extensive range of services, facilities, and housing options.(52)

Similarly, where the work site is in an isolated location, a commute option would appear to be the more desirable alternative. The social and psychological problems that are typically associated with living in a remote place would likely be fewer for a commute/work camp situation than for a new town.(50) In the commute option, workers live in the camp on a rotation basis only, but in the case of a new town, workers as well as their families live in the isolated town with its associated stresses on a permanent basis.

6.3.2 Commuting From Northern Native Indian Communities

To complete this discussion of block-time commuting, it is necessary to examine this option for communities in the northern zone of the Northwest. For non-Indian residents of these communities, the implications of block-time commuting are similar to those for residents of the regional centres. For the Indian residents of these communities, who comprise the majority of the population, a block-time commute option presents some unique implications. Consequently, this discussion centres on an examination of the possible impacts of commuting from native Indian communities.

Studies of northern Indian participation in industrial development have indicated that relocation programs, which move Indian workers to new towns, have a number of problems. The greatest drawback is the considerable stress on the worker and his family created by the long separation periods. Even where the worker's family has been relocated as well, there is still separation from relatives and friends in the home community. The stress of such separation can often reach overwhelming levels, rendering the programs unsuccessful.(37)

Daily commuting is a somewhat more attractive employment option in that separation stress is greatly reduced. However, the conventional industrial work week leaves only weekends free for traditional Indian pursuits. Important activities, such as hunting and trapping, which are the backbone of northern Indian life require more time than two days to carry out.(37)

Studies by Hobart(37) and others,(8,43) indicate that block-time commute programs offer a way of overcoming the disadvantages of relocation and daily commuting and present the greatest potential for enabling Indian participation in industrial development.

Implications for Workers and Families

The most advantageous feature of block-time commuting is that Indian workers are able to carry on their traditional economic activities during the block periods away from the industrial work setting. In fact, experiences indicate that activities such as hunting, trapping, and fishing tend to be positively affected. Workers often invest their employment earnings in snowmobiles and other equipment that enables time-effective resource harvesting.(37,43)

A possible problem with this type of employment, however, is family stress resulting from the separation involved during work periods. While there appears to be a certain amount of separation stress involved, for the relatively short seven day work period, it is generally no more than that involved during hunting or trapping trips.(37,43) Longer rotation periods, in contrast, can produce considerable stress.(36) In addition, families occasionally experience meat and money shortages. Because of the long absence, workers are unable to acquire country food and may have difficulty sending their wages home.(36)

Implications for Communities

Block-time commuting, as with other employment programs, can provide a significant stimulus to the economy of Indian communities by such means as increased cash flows from wage earnings and creation of spin-off industries and businesses.(43) Nevertheless, there tends to be substantial disorganization in some communities at the outset of employment.(36) After this period, most communities seem to adapt relatively well.(36) The initial disorganization could be due in part to the absence of community leaders who may be participating in the program. Perhaps after a period of time, the communities are able to schedule a large part of their activities around the work periods. Even in this case, however, there is potential for community disorganization during emergency situations.

Communities may experience other negative consequences of employment programs as well. Since earnings from employment at resource operations are generally quite high, wage expectations with respect to jobs within the communities may significantly increase, thereby placing strain on local employers.(43) In addition, if there are no alternative employment opportunities, significant community disruption can be

expected once resource operations close. The sudden halt to large and regular cash in-flows from wage earnings could be devastating to the local economy.(43)

In addition to these implications of Indian employment programs which may occur within communities, there may also be implications for inter-community relations. There is evidence that a certain amount of competition between Indian communities may arise.(8) Some communities can have an advantage since they may possess an airstrip or hotel, for example, making them more accessible to company recruitment efforts. Therefore, it is important that resource companies treat all nearby Indian communities equally, in addition to being sensitive to individual community concerns.

Implications for Resource Companies

Block-time commuting allows resource companies the opportunity to recruit from local communities. By doing so, a skilled local workforce is developed which is able to work at alternate resource sites as existing operations close and new ones commence.(50) In this manner, the employment of Indian people from local communities is advantageous to both the people and the companies. However, several problems can also accompany such employment. One major problem results from the relatively low level of schooling that Indians often possess because educational systems are frequently unsuccessful in delivering them adequate services.(47) Consequently, Indian workers can often initially possess lower industrial skill and English fluency levels than do non-Indian workers.(47) In essence, this means that they cannot compete as effectively for jobs. The company must therefore make special recruitment efforts if Indians are to be given equal employment opportunities to those of non-Indians.

Gulf has demonstrated at both its Rabbit Lake and its Mackenzie Delta projects that recruiting from Indian (and Inuit) communities is most successfully performed if companies utilize a sensitive recruitment approach.(43) Good relationships with community leaders must be established in developing recruitment strategies that will mutually benefit both the companies and the communities. Companies must take into consideration that there are normally factions within a community, each with different perspectives regarding resource employment.(54) In addition, it is important that company recruiters meet with prospective workers, as well as their spouses, in order to prepare them both for potential problems that resource employment may cause.(8)

The training program, like the recruitment approach, also requires sensitivity on the part of the company. Indian workers may require substantial instruction at the outset of an employment program. Once this basic training has been completed, however, it is important that the regular training is then performed on an equal basis for both Indian and non-Indian workers. This generally mitigates the potential for jealousies arising on the part of either group. It is also important that, where appropriate, training programs provide journeyman certificates for trainees who complete the programs. This ensures that qualified Indian workers are employable at other resource sites once the current operation closes.(43)

After an initial period of mutual adjustment, it has been found that the majority of Indian (and Inuit) workers adapt to an industrial work situation very well, particularly if they are under the direction of native supervisors.(43) Hobart, for example, reported that the Coppermine workers had comparable labour retention rates to those of the non-indigenous workers following the initial employment period and had better work and camp citizenship attitudes.(43) In addition, Beveridge found that Indian workers at the Rabbit Lake project learned quickly and performed generally as well as non-Indian workers at

mechanical-oriented tasks.(43) This is perhaps why the Indian workers advanced much more quickly and performed better at operations in the mine than in the mill, as Beveridge also notes.(43)

The use of labour pools may offer advantages as a method for utilizing an Indian work force in a block-time commute program.(54) The method involves hiring and training a greater number of workers than the available number of positions, thereby establishing a reserve of workers. This promotes flexibility. Workers may choose to attend to local business or family matters on an extended basis by not returning to the job site for an occasional work period. Such flexibility may lead workers to experience greater job satisfaction and contribute to greater workforce productivity. It also means that companies will generally have all their positions filled as any workers who fail to show for a work shift are replaced by reserve workers, thus reducing company uncertainty.

As a closing note, it should be pointed out that employment programs appear to be most successful if companies demonstrate an understanding attitude toward the concerns of Indian workers. For example, Indians often have considerable responsibility to both their nuclear and their extended families. These responsibilities may at times, particularly during emergency situations, take precedence over work responsibility. Hence, Indian workers may occasionally require special leave arrangements.(43)

6.4 Overall Implications of Settlement Options

This chapter has attempted to provide a comparative overview of the potential socio-economic implications of settlement options associated with northwest development. The three types of settlement schemes are not necessarily mutually exclusive. It is possible that long-distance block-time commuting may be technically feasible for some mine projects but not for others. Furthermore, the development of a new town to service a particular project does not preclude the use of daily and/or block-time commuting from northern zone communities.

In general, the possibility of expanding the small northern communities to house the workforces of mine projects is the least attractive option from a social perspective. In addition, the social impacts of new town development will be felt, primarily, by these smaller communities. While new towns will provide existing communities in the northern zone with a certain amount of indirect and induced economic activity, the potential remains for substantial social conflict between existing residents and residents of new towns, especially if few employment or other economic benefits accrue to existing residents.

In a number of ways, block-time commuting appears to be an attractive option in that it could provide positive benefits to residents of the regional centres in the southern zone as well as to those of the smaller communities in the northern zone. At the same time, block-time commuting from regional centres is the option which would place the least pressure on the fish and wildlife resources of the northern zone.

7.0 CONCLUSIONS

The task of the social impact component of the Environmental and Social Impact Group was to prepare a preliminary assessment of the potential regional socio-economic impacts of an hypothetical development scenario.

In doing so, the working group focussed primarily on the communities north of Stewart and in the vicinity of potential mine projects, although the larger communities along the Highway 16 corridor were also examined. Little attention has been given to Atlin and the Adanac mine proposal in this study because of the level of information available elsewhere (see the Atlin Social Impact Assessment prepared by Conner Development Services Ltd. and the Community Impact Assessment by Stanley Associates Engineering Ltd. for the Adanac Molybdenum Project of Placer Development Ltd).

Chapter 3 of this report presented an historical description of existing socio-economic conditions in the northern region. The study area consists primarily of the traditional hunting and trapping lands of the Tahltan Indians. Although the area has seen substantial in-migration of non-Indians over the past 150 years, it remains to this day a relatively isolated portion of the province inhabited to a significant degree by Indian people. The economy is based on natural resources -- on the animals for food, furs and recreational hunting, on timber operations and on mineral exploration and development.

As outlined in Chapters 3 and 4, a number of issues pertaining to economic development have emerged as concerns of northwest residents. The key issue is that of local participation in the development planning and decision-making process. There are many residents and organizations in the region who argue that, without local participation in the

development of northwest resources, the process would occur in a fashion which would not be in the best interests of northwest residents. Many have expressed the opinion that the costs of development would likely be borne by regional residents with most of the benefits accruing to others outside of the region. In many ways, the land claims issue can be seen as an expression of similar concerns on the part of the Indian community. Indications are that, without some degree of public participation, any proposed large-scale resource development in the region would be contentious and likely result in fairly widespread local opposition.

Chapter 4 demonstrated that the potential demand for labour created by the development scenario might far outstrip any projected supply in the Northwest. In the event that mine projects proceed, it will be necessary to expand the regional pool of labour in order to limit the negative impacts of a large, in-migrating, transient workforce, such as high labour turnover and community instability. A fundamental means of achieving this objective would involve developing recruitment and training programs focussing on those categories of people, such as native Indians, women and youth, that currently have low labour force participation rates.

Chapter 4 also pointed out that the development scenario would likely contribute to increased pressures on fish and wildlife stocks in the region. The costs of this potential impact would likely be borne for the most part by hunters, trappers and guide-outfitters. On the other hand, in addition to the possibility of adding stability to the regional mine workforce, the recruitment of residents of the small communities in the vicinity of mine projects could provide compensating income for the potential economic losses from resource harvesting activities.

A number of settlement options for employees of potential mine projects were discussed in Chapters 5 and 6. Options involved expanding the small communities in the vicinity

of projects, constructing new towns, or involving mine employees in a block-time commute from regional centres along Highway 16.

Section 6.1 examined the social adaptability of existing communities. Based on limited data, it was tentatively concluded that communities such as Dease Lake, Telegraph Creek and Iskut would be overwhelmed by the population increase and associated impacts that would result from their expansion to accommodate the workforce of any major mine project. On the other hand, larger regional centres located farther to the south, such as Stewart, Prince Rupert, Terrace, Kitimat and Smithers, stand to gain benefits from mine developments including stimulation and growth of the service sector and further economic diversification. In addition, indications are that most social services and facilities in the regional centres would have little difficulty in accommodating a fairly rapid rate of population growth. The ability of individual communities to manage the impacts of the development scenario would increase to the degree that the mine workforce is distributed among several communities.

Distributing the workforce among a number of communities would have other advantages as well. For example, economic benefits of development would be spread more equitably over a wider population base. In addition, any one community would have less chance of becoming overly dependent on a single industry or employer. In other words, the effects of a downturn in the mining industry would also be spread among a number of communities, thus reducing any potential threat to the economic viability of any single community.

Sections 6.2 and 6.3 were concerned with the socio-economic implications of two settlement options. By and large, the discussion compares the potential effects of new town development versus a block-time commuting scheme primarily involving northwest regional centers. While most of the analysis is based on an inadequate data base or on a review of experiences

elsewhere, it does suggest some directions for further study.

New town development would likely have minor but beneficial impacts on southern regional centres along Highway 16. However, the impacts in the vicinity of mine projects, in particular, ontowns such as Telegraph Creek and Iskut, require more intensive examination. There are signs that there is potential for a degree of antagonism developing between existing and new residents based on differences in occupation, lifestyle, and standard of living. Indications are, however, that this type of conflict could likely be mitigated by a number of pre-conditions, such as resclution of land claims issues, local participation in planning, and employment opportunities for long-term residents.

Block-time commuting from regional centres to minesites would substantially reduce the population impact of the development scenario on the study area. Population growth would be concentrated in regional centres where there already exist services and facilities which currently possess excess capacity. However, while regional centres may be more effective in attracting a stable workforce to the region than would new towns, among other concerns, the effects of extended separation of employees from their families associated with rotation employment requires further study.

Finally, a southern zone block-time commuting arrangement could be conducive to accommodating a supplemental commuting stream involving northern zone communities such as Telegraph Creek, Dease Lake and Iskut. Block-time employment could possibly offer residents of these communities a wage-income employment alternative while minimizing socio-cultural disruption and interference with established economic activities. It should be noted, however, that the succcess of such employment programs would depend, to a large degree, on the willingness of companies to take extra steps to overcome the potential problems associated with Indian employment.

Subjects Requiring Further Study

This Socio-Economic Overview is a preliminary study. A more detailed analysis will require further work in the following areas:

1) A combined survey and field study of the northern regional population (north of Stewart). This could be a source of four types of information:
   - basic demographic data;
   - an inventory of labour skills;
   - a measure of local attitudes and opinions; and
   - data on social structure and processes.

2) A study of existing resource harvesting and land utilization patterns.

3) In the event that B.C. Hydro proceeds with the Stikine/Iskut Project, the opportunity will present itself for studying the social effects of a construction workforce on the northwest region and its communities.

4) At this preliminary stage, it appears that the possibility of expanding existing communities in the northern zone is the least attractive settlement option that has been examined for mine workforces. In the event that this option is to be given any further consideration in the future, it will be necessary to conduct a detailed community adaptability analysis.

5) Long-distance block-time commuting appears to be a promising settlement alternative. If it is to be given further consideration in the future, it will be necessary to conduct a detailed examination of the social and economic implications of this option.

Particular reference should be given to:

1) implications for workers of work-camp living and of rotation living (i.e. continuously moving back and forth from home community to worksite);

2) potential family stress resulting from work period separations;

3) community stability and disruption;

4) workforce turnover and productivity; and

5) costs of block-time commute operations relative to the costs of new town development from the perspectives of the company and of all levels of government.

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Key

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* An entry with a single asterisk following the author's name indicates a reference related to block-time commuting.

** An entry with two asterisks following the author's name indicates a reference relating to the anthropology or history of the Northwest.

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APPENDIX 1

POPULATION CHARACTERISTICS TABLES

TABLE 1

1981

POPULATION
Northwest Study Area

Census Area/Community	Population	
	1976	1981
Kitimat-Stikine A1	505	952
Stikine A1	1,367	1,716
Stewart1	1,382	1,456
Tahltan Band2		488
Iskut Band2		333
Takla Lake Band2		361
TOTAL		5,306

1 Statistics Canada, 1981 Census, Selected Population, Dwelling, Household and Census Family Characteristics.

2 Indian and Northern Affairs, 1980, Registered Indian Population by Sex and Residence, British Columbia Region.

TABLE 2

1981

WINTER VS SUMMER POPULATION[1]
Selected Communities
Northwest Study Area

	Winter	Summer
Dease Lake	450	555
Iskut	280	315
Telegraph Creek	280	305
Bob Quinn Lake	40	40

1 Table IV-1, Stikine-Iskut Project: Social and Economic Impacts, 1982, B.C. Hydro.

TABLE 3

1980

INDIAN BAND POPULATION[1]
Northwest Study Area

	TOTAL	ON RESERVE	ON CROWN LAND	OFF RESERVE
TAHLTAN	488	173	1	314
Male	265	95	1	169
Female	223	78		145
ISKUT	333	206		126
Male	177	114		63
Female	156	93		63
TAKLA LAKE	361	264		97
Male	175	132		43
Female	186	132		54
BRITISH COLUMBIA	57,295	34,807	319	22,169

[1] Indian and Northern Affairs, Registered Indian Population by Sex and Residence 31/12/80.

TABLE 4

POPULATION BY AGE AND SEX, 1981
Northwest Study Area

CENSUS AREA/COMMUNITY	AGE GROUPS					
	0-4	5-14	15-24	25-44	45-64	65+
Kitimat-Stikine A[1]						
Males	60	80	75	245	70	5
Females	50	75	70	170	40	5
Total (945)	110	155	145	415	110	10
Stikine A1						
Males	80	165	160	350	140	30
Females	95	150	150	305	85	15
Total (1725)	175	315	310	655	225	45
Stewart[1]						
Males	85	125	165	320	120	10
Females	85	120	120	235	60	0
Total (1445)	170	245	285	555	180	10
Tahltan Band2						
Males	45	70	45	80	35	0
Females	35	70	40	80	25	5
Total (530)	80	140	85	160	60	5
Iskut Band[3]						
Males	25	30	45	25	10	10
Females	15	25	25	25	15	10
Total (260)	40	55	70	50	25	20
Takla Lake Band4						
Males	15	30	30	20	15	5
Females	25	40	25	15	15	5
Total (240)	40	70	55	35	30	10

1 Statistics Canada, 1981, Selected Population, Dwelling, Household and Census Family Characteristics.
2 Statistics Canada, 1981, same as in (1), Dease Lake Reserve plus Telegraph Creek Reserve.
3 Statistics Canada, 1981, same as in (1), Kluachon Lake Reserve.
4 Statistics Canada, 1981, same as in (1), Takla Lake 9 Reserve.

TABLE 5

1981
FEMALES AS PERCENTAGE OF POPULATION BY AGE GROUPS[1]

Northwest Study Area[2] and British Columbia

AGE GROUP	NW Males	NW Females	Females as % of NW Total	Females as % of B.C. Total
15-19 years of age	185	135	42%	49%
20-24 " " "	215	205	49%	50%
25-34 " " "	570	480	16%	50%
35-44 " " "	345	230	40%	49%
45-54 " " "	240	135	36%	49%
55-64 " " "	90	50	36%	53%
65 + " " "	45	20	31%	56%

1. Statistics Canada, 1981, Population Characteristics.

2. Not including Indian reserves.

TABLE 6

1981

MARITAL STATUS1

Population in Northwest Study Area

Census Area/Community	Single Over age 15	Married2	Widowed	Divorced
Kitimat-Stikine A	125	525	10	20
Stikine A	340	840	15	35
Stewart	300	690	10	30
Tahltan Band3	95	195	10	10
Iskut Band4	65	85	5	-
Takla Lake Band5	65	70	5	-

1. Statistics Canada, 1981, Selected Population, Dwelling, Household and Census Family Characteristics.

2. The category "married" includes separated married couples.

3. Dease Lake Reserve plus Telegraph Creek Reserve.

4. Kluachon Lake Reserve.

5. Takla Lake Reserve.

TABLE 7

1981
FAMILY CHARACTERISTICS[1]
NORTHWEST STUDY AREA

Census Area/ Community	Families with 2 Parents	Families with 1 Parent	Children at Home by Age Under 6	6-14	15-24	25+	Average No. of Persons/ Family	Average No. of Children/ Family[5]
Kitimat-Stikine A	245	10	125	140	30	--	3.1	1.2
Stikine A	385	40	200	260	145	5	3.3	1.4
Stewart	315	25	205	215	120	5	3.5	1.6
Tahltan Band[2]	95	10	75	115	55	5	4.3	2.4
Iskut Band[3]	40	5	30	40	40	--	4.3	2.5
Takla Lake Band[4]	30	10	40	55	35	10	5.5	3.7
British Columbia	648,965	78,715	222,395	349,910	280,575	31,515	3.1	1.2

1. Statistics Canada, 1981, Selected Population, Dwelling, Household and Census Family Characteristics.
2. Dease Lake Reserve plus Telegraph Creek reserve.
3. Kluachon Lake Reserve.
4. Takla Lake & Reserve.
5. Calculated using the total number of children at home and the total number of families.

TABLE 8

1976
EDUCATION - SUMMARY[1]
NORTHWEST STUDY AREA

Census Area/ Community	Less than Grade 5	Grades 5-8	Grades 9-10	Grades 11-13	Post Secondary	Some University	University Degree
Kitimat-Stikine A	11%	25%	17%	14%	9%	6%	8%
Stikine A	4%	15%	18%	24%	23%	10%	6%
Stewart	2%	15%	25%	24%	16%	14%	4%
Tahltan Band[2]	15%	26%	18%	15%	16%	6%	4%
Takla Lake Band[3]	24%	41%	29%	6%	--	--	--
British Columbia	3%	15%	19%	29%	16%	11%	7%

1. Statistics Canada, 1976, Population Characteristics.
2. Dease Lake Reserve plus Telegraph Creek Reserve.
3. Takla Lake Reserve.

TABLE 9

1976
EDUCATION LEVELS[1]
POPULATION OVER AGE 15
Northwest Study Area

Census Area/ Community[2]	EDUCATION LEVEL: Less than Grade 5	Grades 5-8	Grades 9-10	Grades 11-13	Post-Secondary	Some Univ.	Univ. Degree
Kitimat-Stikine A							
Males (175)	20	45	30	20	35	10	10
Females (155)	15	35	25	25	25	10	15
Total (325)	35	80	55	45	60	20	25
Stikine A							
Males (535)	20	75	105	120	120	60	35
Females (415)	20	65	65	105	100	35	20
Total (945)	40	140	170	225	220	95	55
Stewart							
Males (510)	10	65	145	110	80	70	30
Females (410)	10	75	90	115	65	55	10
Total (920)	20	140	235	225	145	125	40
Tahltan Band[3]							
Males (150)	15	35	25	20	30	10	10
Females (125)	25	35	25	20	15	5	0
Total (275)	40	70	50	40	45	15	10
Takla Lake Band[4]							
Males (40)	10	15	15	--	--	--	--
Females (45)	10	20	10	5	--	--	--
Total (85)	20	35	25	5			

1. Statistics Canada, 1976, Population Characteristics. These data from the 1981 Census will not be available until 1984.
2. Iskut Band was not enumerated at Kluachon Lake in 1976.
3. Dease Lake Reserve plus Telegraph Creek Reserve.
4. Takla Lake Reserve.

TABLE 10

1976
POPULATION MOBILITY[1]
(Population 5 years of age and over)

Census Area/ Community	NON-MOVERS[2]		MOVERS[3]							
			Same Area/ Community		Elsewhere in B.C.		Elsewhere in Canada		Outside Canada	
	No.	%[4]	No.	%[4]	No.	%[4]	No.	%[4]	No.	%[4]
Kitimat-Stikine A	210	46%	50	11%	130	29%	25	6%	35	8%
Stikine A	380	31%	--		270	22%	205	17%	135	11%
Stewart	295	24%	30	3%	280	23%	215	18%	125	10%
Tahltan Band[5]	140	35%	20	5%	110	27%	20	5%	15	4%
Iskut Band[6]	---	---	--	--	---	--	---	--	---	--
Takla Lake Band[7]	165	100%	--	--	---	--	---	--	---	--
British Columbia		42%		23%		20%		9%		5%

1. Statistics Canada, 1976, Population Characteristics. Information on this subject from the 1981 Census will not be available until 1983 or 1984.
2. Non-movers occupied the same dwelling in 1976 as in 1971.
3. Movers occupied a different dwelling in 1976 than in 1971.
4. The number of non-movers or movers as a percentage of the total 1976 population over 5 years old.
5. Dease Lake Reserve plus Telegraph Creek Reserve.
6. The Iskut Band (Kluachon Lake Reserve) was not enumerated separately in 1976.
7. Takla Lake Reserve.

TABLE 11

1976
LABOUR FORCE BY AGE AND SEX[1]
Kitimat-Stikine A, Stikine A and Stewart

Northwest Study Area

Age Groups	Male		Female		Total		B.C. Comparison	Females as % of Labour Force	
	No.	%	No.	%	No.	%		NW Area	B.C.
15-19 years of age	85	9%	45	11%	130	9%	11%	35%	45%
20-24 years of age	115	12%	55	13%	170	12%	15%	32%	44%
25-34 years of age	365	36%	150	36%	515	37%	26%	29%	37%
35-44 years of age	225	23%	90	21%	315	22%	19%	29%	36%
45-54 years of age	140	14%	55	13%	195	14%	17%	28%	36%
55-64 years of age	55	6%	15	4%	70	5%	10%	21%	33%
65+ years of age	5	0.5%	5	1%	10	1%	2%	50%	30%
	995	100%	420	100%	1415	100%	100%		

1. Statistics Canada, 1976, Population Characteristics. Information as of 1981 on this subject will not be available until 1983 or 1984.

TABLE 12

1976
LABOUR FORCE BY AGE AND SEX[1]
Telegraph Creek, Dease Lake, Takla Lake Reserves

Northwest Study Area

Age Groups	Males			Females			Total			B.C. Comparison
	No.	%	NW[2]	No.	%	NW[2]	No.	%	NW[2]	
15-19 years of age	10	7%	9%	5	10%	11%	15	8%	9%	11%
20-24 years of age	20	14%	12%	5	10%	13%	25	13%	12%	15%
25-34 years of age	55	40%	36%	25	50%	36%	80	43%	37%	26%
35-44 years of age	30	22%	23%	5	10%	21%	35	18%	22%	19%
45-54 years of age	15	11%	14%	0	0%	13%	15	8%	14%	17%
55-64 years of age	10	7%	6%	10	20%	4%	20	10%	5%	10%
65+ years of age	0	0%	0.5%	0	0%	1%	0	0%	1%	2%
	135	100%	100%	50	100%	100%	185	100%	100%	100%

1. Statistics Canada, 1976, Population Characteristics. Please note that the population size is so small that significant errors may be present.
2. NW refers to the population presented in Table 9.

TABLE 13

1976
MALE LABOUR FORCE PARTICIPATION
BY AGE GROUPS[1]

Kitimat-Sikine A, Stikine A and Stewart
Northwest Study Area

Age Group	Total No.	No. in Labour Force	% in Labour Force[2]	B.C. Comparison
15-19 years of age	135	85	63%	54%
20-24 " " "	150	115	77%	87%
25-34 " " "	380	365	96%	91%
35-44 " " "	255	225	88%	93%
45-54 " " "	160	140	88%	90%
55-64 " " "	90	55	61%	73%
65+ " " "	35	5	14%	14%
TOTAL	1220	995	82%	75%
Kitimat-Stikine A			79%	
Stikine A			81%	
Stewart			83%	

1. Statistics Canada, 1976, Population Characteristics. 1981 information not available in January, 1983.

2. This figure and the comparable one for B.C. is known as the labour force participation rate.

TABLE 14

1976
FEMALE LABOUR FORCE PARTICIPATION
BY AGE GROUPS[1]

Kitimat-Sikine A, Stikine A and Stewart
Northwest Study Area

Age Group	Total No.	No. in Labour Force	% in Labour Force[2]	B.C. Comparison
15-19 years of age	140	45	32%	46%
20-24 " " "	150	55	37%	67%
25-34 " " "	320	150	47%	54%
35-44 " " "	185	90	49%	56%
45-54 " " "	90	55	61%	51%
55-64 " " "	60	15	25%	33%
65+ " " "	35	5	14%	5%
TOTAL	980	420	43%	45%
Kitimat-Stikine A			37%	
Stikine A			48%	
Stewart			40%	

1. Statistics Canada, 1976, Population Characteristics. 1981 information not available in January, 1983.

2. This figure and the comparable one for B.C. is known as the labour force participation rate.

TABLE 15

1976
FEMALES AS PERCENTAGE OF POPULATION BY AGE GROUPS[1]

Northwest Study Area[2]

Age Group	NW Males	NW Females	Females as % of NW Total	Females as % of B.C. Total
15-19 years of age	135	140	51%	49%
20-24 " " "	170	150	47%	50%
25-34 " " "	380	320	46%	49%
35-44 " " "	255	185	42%	48%
45-54 " " "	160	90	36%	50%
55-64 " " "	90	60	40%	53%
65+ " " "	35	35	50%	55%

1. Statistics Canada, 1976, Population Characteristics.

2. Not including Indian reserves.

TABLE 16

1976
LABOUR FORCE PARTICIPATION
BY AGE AND SEX[1]

Telegraph Creek, Dease Lake, Takla Lake Reserves
Northwest Study Area

Age Groups	MALES			FEMALES		
	Total No.	No. in Labour Force	% in Labour Force	Total No.	No. in Labour Force	% in Labour Force
15-19 years of age	30	10	33%	25	5	20%
20-24 " " "	30	20	67%	30	5	17%
25-34 " " "	60	55	92%	55	25	46%
35-44 " " "	30	30	100%	15	5	33%
45-54 " " "	20	15	75%	20	0	0%
55-64 " " "	10	10	100%	5	10	100%
65+ " " "	15	0	0%	10	0	0%
TOTAL	190	135	71%	170	50	29%
Unemployed	30			10		

PARTICIPATION RATES	Males	Females
Telegraph Creek	64.7	40.0
Dease Lake	92.3	44.4
Takla Lake	50.0	0.0

1. Statistics Canada, 1976, Population Characteristics. Please note that the population size is so small that significant errors may be present.

TABLE 17

1976
FAMILY LABOUR FORCE ACTIVITY[1]
Northwest Study Area

Census Area/Community	Participation Rates		Unemployment Rates	
	Husbands	Wives	Husbands	Wives
Kitimat-Stikine A	95.6	36.4	4.8	12.5
Stikine A	86.0	48.3	5.9	3.4
Stewart	92.1	38.1	1.7	12.5
Telegraph Creek Reserve	75.0	50.0	33.3	--[2]
Dease Lake Reserve	100.0	50.0	12.5	25.0
Takla Lake Reserve	50.0	--[2]	33.3	--[2]
B.C.	80.4	42.9	4.9	8.8

1. Statistics Canada, 1976, Population Characteristics. Does not include male or female lone parent families for which the Northwest sample size is too small to calculate rates.

2. Sample size too small to calculate rates.

TABLE 18

1976
UNEMPLOYMENT RATES
BY SEX[1]
Northwest Study Area

Census Area/Community	Males	Females
Kitimat-Stikine A	7.4	27.3
Stikine A	5.7	7.5
Stewart	3.5	12.1
Telegraph Creek Reserve	27.3	16.7
Dease Lake Reserve	8.3	25.0
Takla Lake Reserve	50.0	33.3
B.C. 1976	7.9	10.1
B.C.[2] 1982	13.8	12.4

1. Statistics Canada, 1976, Population Characteristics.

2. Central Statistics Bureau, Ministry of Industry and Small Business Development, November 1982, Current Labour Market Conditions.

TABLE 19

1971
EXPERIENCED LABOUR FORCE
BY INDUSTRY[1]

	Kitimat-Stikine C.D.	Stikine C.D.	% of Total
Agriculture	85	5	0.6%
Forestry (primarily logging)	1,560	5	10.5%
Fishing & Trapping	40	--	0.3%
Mines, Quarries & Oilwells	555	420	6.6%
Manufacturing	3,960	15	26.8%
Construction	750	25	5.2%
Transportation, Communication, and Other Utilities	1,070	85	7.8%
Trade	1,665	20	11.4%
Finance, Insurance & Real Estate	345	10	2.4%
Community, Business and Personal Service	2,545	75	17.7%
Public Administration and Defence	435	15	3.0%
Unspecified or Undefined	1,105	55	7.8%
Total All Industries	14,115	730	100%

Source: Statistics Canada, 1971 Census

* Latest available. 1981 Census Data will not be available until 1983.

TABLE 20

1978/1979
INCOME[1]

Northwest Study Area

Census Area/ Community	1978			1979		
	Returns (numbers)	Total Income ($000's)	Average Income ($)	Returns (numbers)	Total Income ($000's)	Average Income ($)
Kitimat-Stikine A[2]	476	3,478	$7,307	528	4,804	$9,098
Stewart	509	6,248	$12,276	713	9,403	$13,189
Stikine[3]	1,293	162,289	$12,597	1,322	21,142	$15,992
British Columbia			$12,045			$13,277

1. Compiled by Central Statistics Bureau, Ministry of Industry and Small Business Development in July 1981 from unpublished data supplied by Revenue Canada.

2. Includes Telegraph Creek Reserve.

3. Includes Stikine A and Dease Lake Reserve.

TABLE 21

1981
HOUSING CHARACTERISTICS[1]

Northwest Study Area

Census Area/ Community	OCCUPIED DWELLINGS[2] Owned	Rented	PRIVATE HOUSEHOLDS Total	Number of Persons Per 1	2	3	4-5	6-9	10+	Average Number Per
Kitimat-Stikine A	115	225	340	85	105	55	90	10	--	2.6
Stikine A	315	200	515	85	135	80	185	30	5	3.1
Stewart	120	310	430	75	95	75	160	25	--	3.1
Tahltan Band[3]	80	40	120	15	20	20	40	25	10	4.2
Iskut Band[4]	45	5	50	5	10	5	5	20	5	4.8
Takla Lake Band[5]	40	5	45	10	5	5	15	15	10	5.6

1. Statistics Canada, 1981, Selected Population, Dwelling, Household and Census Family Characteristics.
2. Includes mobile/modular dwelling units.
3. Dease Lake Reserve plus Telegraph Creek Reserve.
4. Kluachon Lake Reserve.
5. Takla Lake Reserve.

APPENDIX 2

1910 DECLARATION OF THE TAHLTAN NATION

We, the undersigned members of the Tahltan tribe, speaking for ourselves, and our entire tribe, hereby make known to all whom it may concern, that we have heard of the Indian Rights movement among the Indian tribes of the Coast, and of the southern interior of B.C. Also, we have read the Declaration made by the chiefs of the southern interior tribes at Spences Bridge on the 16th July last, and we hereby declare our ... Intention to join with them in the fight for our mutual rights, and that we will assist in the furtherance of this object in every way we can, until such time as all these matters of moment to us are finally settled. We further declare as follows:

Firstly -- We claim the sovereign right of all the country of our tribe -- this country of ours which we have held intact from the encroachments of other tribes, from time immemorial, at the cost of our own blood. We have done this because our lives depended on our country. To lose it meant we would lose our means of living, and therefore our lives. We are still, as heretofore, dependant for our living on our country, and we do not intend to give away the title to any part of same without adequate compensation. We deny the B.C. government has any title or right of ownership in our country. We have never treated with them, nor given them any such title. (We have only very lately learned the B.C. government makes this claim, and that it has for long considered as its property all the territories of the Indian tribes in B.C.).

Secondly -- We desire that a part of our country, consisting of one or more large areas (to be selected by us), be retained by us for our own use, said lands, and all thereon to be acknowledged by the government as our absolute property. The rest of our tribal land we are willing to relinquish to the B.C. government for adequate compensation.

Thirdly -- We wish it known that a small portion of our lands at the mouth of the Tahltan River, was set apart a few years ago by Mr. Vowell as an Indian reservation. These few acres are the only reservation made for our tribe. We may state we never applied for the reservation of this piece of land, and we had no knowledge why the government set it apart for us, nor do we know exactly yet.

Fourthly -- We desire that all questions regarding our lands, hunting, fishing, etc., and every matter concerning our welfare, be settled by treaty between us and the Dominion and B.C. governments.

Fifthly -- We are of the opinion it will be better for ourselves, also better for the governments and all concerned, if these treaties are made with us at a very early date, so all friction, and misunderstanding between us and the whites may be avoided, for we hear lately much talk of white settlement in this region, and the building of railways, etc., in the near future.

Signed at Telegraph Creek, B.C., this eighteenth day of October, nineteen hundred and ten, by

NANOK
Chief of the Tahltans.
NASTULTA
alias Little Jackson.
GEORGE ASSADZA, KENETL
alias Big Jackson, and eighty other
members of the tribe.

APPENDIX 3

SUMMARY OF DETAILED SETTLEMENT OPTIONS

There are nine proposed mining projects located in northwest British Columbia: Stikine, Sustut, Klappan, Schaft Creek, Red Chris, Eaglehead, Letain, Kutcho Creek and Adanac. All mines but Adanac are considered for settlement options. Mines are grouped together according to their location and settlement options are listed under each mine grouping.

Eaglehead, Letain, and Kutcho Creek Mines

Since the projects are in close proximity to each other, a single townsite to serve all three mines is considered. Due to logistical problems associated with the different start-up and termination dates for each mine, however, individual commutes are also considered as a settlement option.

Options considered:

To serve all three mines

i) expansion of Dease Lake town
location: west of mines on Highway 37;

ii) construction of Turnagain town
location: between Eaglehead and Letain in the Turnagain River Valley;

To serve each mine individually

iii) commutes from Regional Centres.

Schaft Creek and Red Chris Mines

Due to the considerable distance between these two mines, there appears to be only one potential townsite that could possibly serve both mines. All other settlement options would serve only one of the two mines.

Options considered:

To serve both mines

i) construction of Kinaskan town
location: between the mines on Highway 37 at the south end of Kinaskan Lake;

To serve Schaft Creek mine only

ii) expansion of Telegraph Creek town
location: north of mine on the access road running west from Dease Lake town;

iii) construction of Bob Quinn Lake town
location: south-east of mine on Highway 37 near Bob Quinn Lake;

iv) construction of Mess Lake town
location: north of mine adjacent to Mess Lake;

v) commute from Regional Centres;

To serve Red Chris mine only

vi) expansion of Iskut
location: north of mine on Highway 37;

vii) commute from Regional Centres.

Klappan and Sustut Mines

Like the Schaft Creek/Red Chris mine group, the considerable distance between these two mines precludes all but one of the settlement options from serving both mines.

Options considered:

To serve both mines

i) construction of MacEvoy Flats town
location: between the mines approximately sixty kilometres from Klappan and adjacent to the Skeena River;

To serve Klappan mine only

ii) construction of Kluayetz town
location: adjacent to mine at the junction of Little Klappan, Skeena, and Spatsizi Rivers as well as Kluayetz Creek;

iii) construction of Tsetia town
location: north-west of mine on the B.C.R. sub-grade at the junction of Klappan and Little Klappan Rivers as well as Eaglenest and Tsetia Creeks;

iv) commute from Regional Centres;

To serve Sustut mine only

v) commute from Regional Centres.

Stikine Mine

This mine's close proximity to the Schaft Creek mine would suggest the use of a townsite to serve both projects. The mountainous terrain between the two mines, however, would mean that access to a common townsite would require tunnel construction which could be prohibitively expensive. New townsite development to serve the Stikine mine only may also be a relatively poor option since the town would be very small, poorly serviced, and extremely isolated. Similarly, a commute option appears unattractive as the distance between the mine and potential airstrips would necessitate high cost and time consuming travel. Consequently, all settlement options present potential difficulties.

Options considered:

i) construction of Mess Lake town, to serve Schaft Creek mine also
   location: north of mine adjacent to Mess Lake;

ii) construction of a townsite, to serve Stikine mine only
   location: various sites near the mine have been considered;

iii) commute from Regional Centres.

APPENDIX 4

ALTERNATIVE MODES OF COMMUTING

Block-time commute operations often involve long commuting distances. There are negligible data, however, concerning average or maximum commuting distances or times for block commutes, nor is there sufficient information concerning distance or time thresholds for different modes of travel. It is obvious, nevertheless, that especially for operations which involve long commuting distances, speed of travel is of utmost importance. Companies surely would feel that speed is especially critical if they are paying travel time compensation to their employees. Consequently, air commuting is commonly used for long distance commute operations.([48]) Besides speed of movement, there are other advantages associated with air commuting. First, since travel times are reduced, workers experience a diminished sense of isolation.([48]) Second, a relatively large labour force can be tapped as access is opened up to a considerable number of communities.([48]) Third, indications are that air travel is a relatively safe mode of commute transportation.([48]) Finally, while there is some concern about lost time due to hazardous flying conditions during poor weather,([48]) the Rabbit Lake operation as an example, has experienced few flight delays.([44]) This might not necessarily be the case for air commute operations in northwest B.C., however, since the terrain is very mountainous.

Where commuting distances are not especially long, so that speed of travel is not a critical factor, then surface modes of travel may be advantageous. Fear of flying is eliminated, commute operating costs are likely less, and northern development may be better facilitated since permanent access becomes available by means of road or rail infrastructure.([2]) Rail transportation is generally the most dependable mode of travel in

adverse weather([20]) and a change and shower car can be provided on a train.([20]) There is little information concerning road travel, other than workers' general preference for travelling by bus than by car.([48]) Bus commuting is obviously less fatiguing for workers and is a safer mode of travel. It is also more economical since there are fewer vehicles, thus road maintenance costs are reduced and parking problems are minimized. Nevertheless, relative to car travel, bus commuting increases travel time and reduces comfort, flexibility and privacy.([48])